Sample Questions From MRCP Website
MRCP Part Two

لا تنسونا من صالح دعائكم

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https://t.me/MRCP_Good_Doctor_To_Be

Question 1

A 67-year-old woman was referred with a 3-month history of painful legs, malaise and weight loss. She had had type 2 diabetes mellitus and hypertension for 18 years. Her medication was gliclazide 160 mg twice daily, ramipril 2.5 mg daily and atorvastatin 20 mg daily.

On examination, her BP was 145/90 mmHg. She had some tenderness over her spine and legs.

Investigations:

serum sodium	138 mmol/L (137–144)
serum potassium	5.5 mmol/L (3.5–4.9)
serum creatinine	240 µmol/L (60–110)
serum corrected calcium	1.80 mmol/L (2.20–2.60)
eGFR (MDRD)	19 mL/min/1.73 m^2 (>60)
serum phosphate	1.60 mmol/L (0.80–1.45)
plasma parathyroid hormone	22.2 pmol/L (0.9–5.4)

What therapy is most likely to correct the calcium and parathyroid hormone concentrations?

A: alendronic acid ○

B: alfacalcidol ○

C: calcitonin ○

D: cinacalcet ○

E: ergocalciferol ○

Question 1

Incorrect

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Answers

A: alendronic acid
B: alfacalcidol
C: calcitonin
D: cinacalcet
E: ergocalciferol

Correct answer: B

Explanation

(73%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has a raised serum creatinine with hypocalcaemia and a raised serum phosphate. This pattern is consistent with chronic kidney disease (CKD) with impaired renal phosphate secretion and deficient activation of vitamin D (leading to impaired gut absorption of calcium and hypocalcaemia). The raised plasma parathyroid hormone is due to secondary hyperparathyroidism in an attempt to restore the serum calcium concentration to normal. The leg pain is arising from renal bone disease.

The correct answer is alfacalcidol. Correction of the vitamin D deficiency is the key to restoring normal calcium homeostasis, and must be with alfacalcidol (1-α hydroxycolecalciferol) which replaces the deficient activation step in CKD. Ergocalciferol cannot be activated in CKD.

Question 2

A 52-year-old man presented with a 4-month history of altered bowel habit with occasional bright-red blood per rectum.

Colonoscopy showed an annular sigmoid tumour, and histology confirmed an adenocarcinoma. A staging CT scan showed two adjacent 1-cm lesions in the right lobe of the liver, highly suspicious for liver metastases.

What is the most appropriate management?

A: biopsy of liver lesions ○

B: palliative chemotherapy ○

C: palliative radiotherapy ○

D: staged surgical resection of carcinoma and liver lesions ○

E: stenting of colorectal carcinoma ○

Question 2

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What is the most appropriate management?

Answers

A: biopsy of liver lesions
B: palliative chemotherapy
C: palliative radiotherapy
D: staged surgical resection of carcinoma and liver lesions
E: stenting of colorectal carcinoma

Correct answer: D

Explanation

(51%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Historically, the presence of liver metastases complicating colorectal carcinoma would have meant inoperable disease. However, in selected cases, a 5-year survival rate of up to 30% may be achieved by resection of the primary colonic tumour and liver metastases. Biopsy of the liver lesions would potentially seed the tumour, and render the patient inoperable.

Question 3

A 53-year-old man presented with a 2-week history of diarrhoea associated with cramping abdominal pain. He was passing up to 15 very loose and watery stools per day. He had no blood in his stools. He had undergone a heart transplant 2 years previously, and his medication comprised ciclosporin, prednisolone, aspirin and ramipril.

Investigations:

haemoglobin	110 g/L (130–180)
white cell count	12.5 × 10^9/L (4.0–11.0)
serum urea	14.4 mmol/L (2.5–7.0)
serum creatinine	135 μmol/L (60–110)
serum CRP	35 mg/L (<10)
stool culture	negative
stool microscopy	cysts identified on modified acid-fast stain

What is the most likely pathogen?

A: Cryptosporidium parvum ○

B: Entamoeba histolytica ○

C: Giardia intestinalis ○

D: Pneumocystis jirovecii ○

E: Toxoplasma gondii ○

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A: Cryptosporidium parvum
B: Entamoeba histolytica
C: Giardia intestinalis
D: Pneumocystis jirovecii
E: Toxoplasma gondii

Correct answer: A

Explanation

(89%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The protozoan Cryptosporidium parvum is a common cause of infectious diarrhoea. In healthy persons, it usually causes a self-limiting illness. However, in the immunocompromised it can cause severe, prolonged diarrhoea and treatment is very difficult. Cryptosporidium parvum is diagnosed by performing an acid-fast stain on faeces and this demonstrates the characteristic cysts of this microorganism.

In the severely immunocompromised patient, Pneumocystis jirovecii typically causes pulmonary infections and Toxoplasma gondii causes cystic brain lesions. Entamoeba histolytica and Giardia intestinalis are both intestinal protozoa but they are not detected by acid-fast staining methods. Entamoeba histolytica causes dysentery and Giardia intestinalis causes flatulence, steatorrhoea and abdominal pain.

Question 4

An 82-year-old woman with hypertension presented with a 6-week history of tiredness, ankle swelling and arthralgia.

On examination, her pulse was 92 beats per minute and her BP was 150/90 mmHg. She had bilateral ankle oedema. Her serum creatinine concentration had been normal 6 months previously. Urinalysis showed blood 2+, protein 2+.

Investigations:

haemoglobin	103 g/L (115–165)
white cell count	10.5 × 10^9/L (4.0–11.0)
platelet count	410 × 10^9/L (150–400)

serum creatinine	252 µmol/L (60–110)
eGFR	17 mL/min/1.73 m^2 (>60)

What is the most likely cause of her renal impairment?

A: amyloidosis ○

B: crescentic glomerulonephritis ○

C: IgA nephropathy ○

D: membranoproliferative glomerulonephritis ○

E: membranous nephropathy ○

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Answers

A: amyloidosis
B: crescentic glomerulonephritis
C: IgA nephropathy
D: membranoproliferative glomerulonephritis
E: membranous nephropathy

Correct answer: B

Explanation

(25%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This elderly woman's serum creatinine has risen from normal to 252 µmol/L in less than 6 months. This feature, along with tiredness, arthralgia, a urinalysis that shows moderate amounts of protein and blood, and a mild anaemia makes it likely that she has an ANCA-associated vasculitis. A crescentic glomerulonephritis is the typical renal histological finding in these circumstances.

The other options are all much less likely to cause rapid development of renal failure. In addition, renal amyloidosis and membranous nephropathy usually present with the nephrotic syndrome.

Question 5

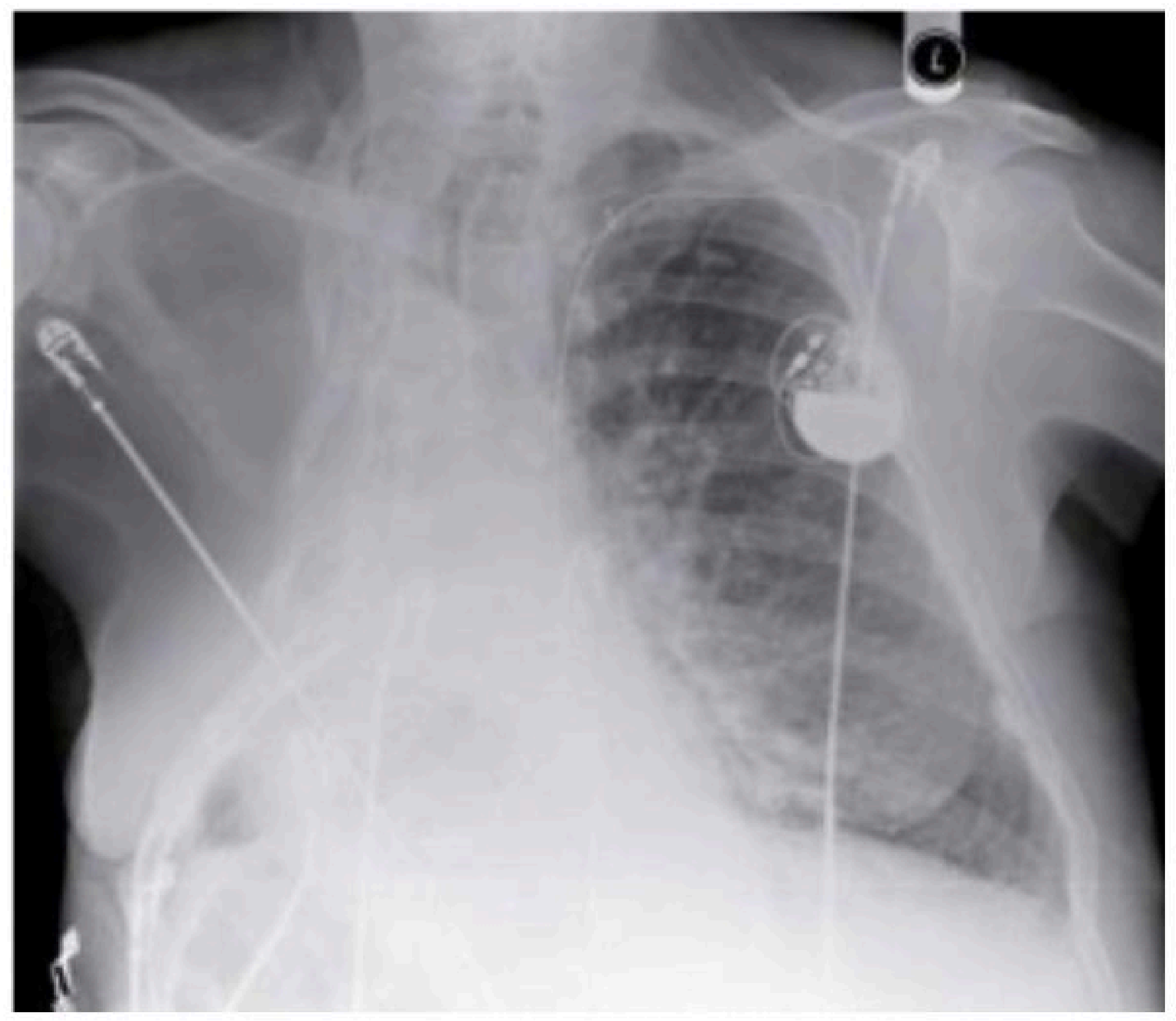
An 87-year-old man presented to the emergency department with a 4-week history of breathlessness, dry cough and confusion. He also complained of headaches that were worse in the morning. He had a history of tuberculosis as a teenager.

On examination, he was drowsy. His GCS was 14. His pulse was 102 beats per minute, and his respiratory rate was 24 breaths per minute. His oxygen saturation was 85% (94–98) breathing air. On auscultation of his chest, there were some crackles in the left lower zone and generally decreased breath sounds on the right.

Investigations:

arterial blood gases breathing air:	
PO_2	6.8 kPa (11.3–12.6)
PCO_2	9.8 kPa (4.7–6.0)
pH	7.25 (7.35–7.45)
H^+	56 nmol/L (35–45)
bicarbonate	32 mmol/L (21–29)
base excess	+10.0 mmol/L (±2.0)

chest X-ray	see image



What is the most appropriate treatment?

- A: aminophylline ○
- B: continuous positive airway pressure ○
- C: doxapram ○
- D: furosemide ○
- E: non-invasive ventilation ○

Question 5

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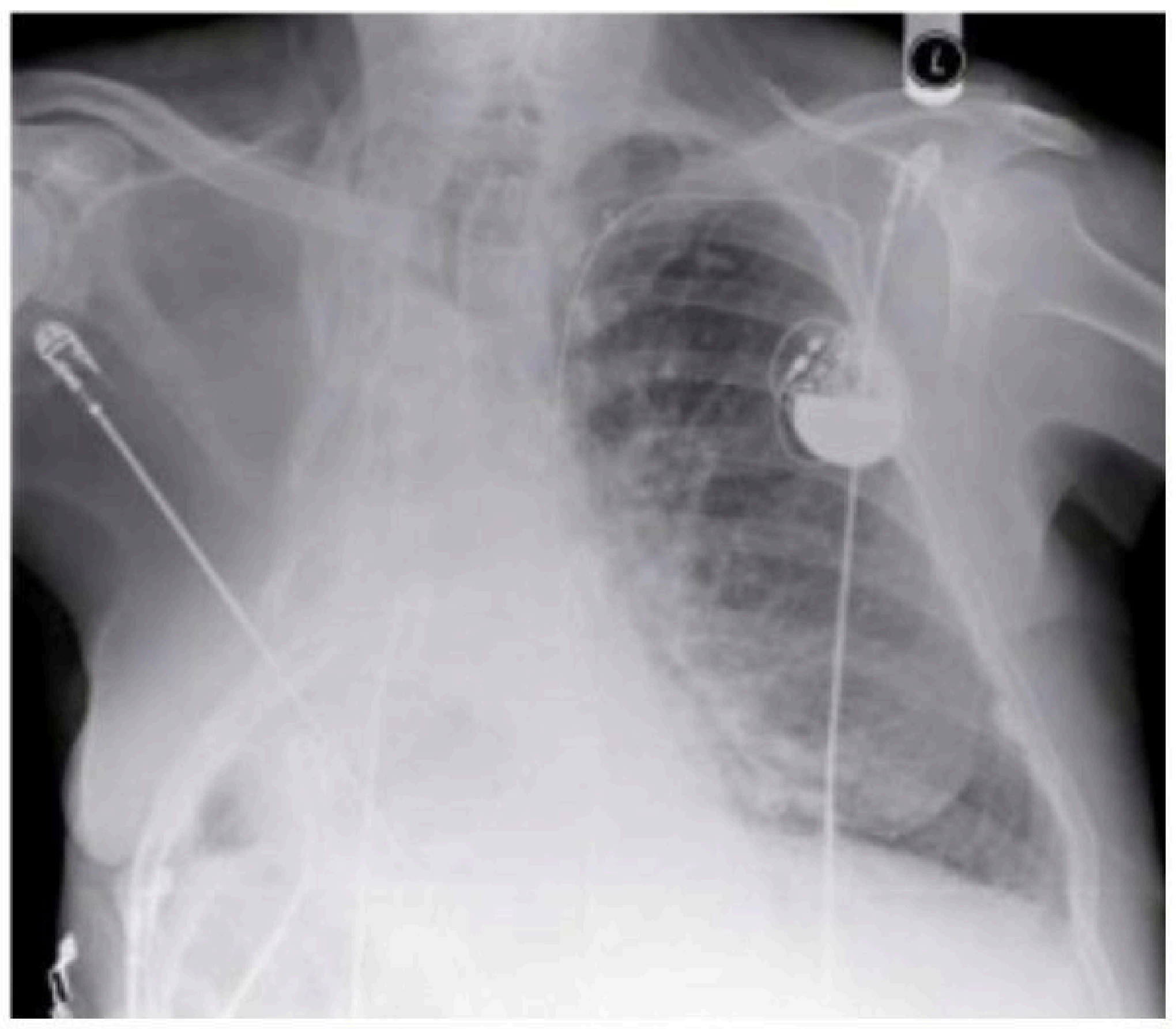

What is the most appropriate treatment?

Answers

A: aminophylline
B: continuous positive airway pressure
C: doxapram
D: furosemide
E: non-invasive ventilation

Correct answer: E

Explanation

(66%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has developed acute on chronic type II respiratory failure. He had previously undergone a right-sided thoracoplasty as treatment for tuberculosis (an operation which was commonly performed in the 1940s / early 1950s before the advent of combination antituberculous chemotherapy). It is likely that he has decompensated because of a developing left lower lobe pneumonia.

The preferred initial form of treatment and correct answer for his respiratory failure is non-invasive ventilation (NIV) to provide assisted ventilatory support. This is preferable to continuous positive airway pressure (CPAP) in the context of a raised pCO_2. Doxapram is less effective and more toxic than NIV (risk of arrhythmias) and there is no suggestion of bronchospasm or cardiac failure thus aminophylline and furosemide are not indicated.

Question 6

A 34-year-old woman was admitted with shortness of breath and found to have a pulmonary embolus. On systematic enquiry, she admitted to cold intolerance. She was not taking any medication.

On examination, she had a livedo reticularis rash on her thighs.

Investigations:

haemoglobin	126 g/L (115–165)
white cell count	4.2 × 10^9/L (4.0–11.0)
lymphocyte count	1.0 × 10^9/L (1.5–4.0)

antinuclear antibodies	negative

lupus anticoagulant	positive

serum complement C3	120 mg/dL (65–190)
serum complement C4	45 mg/dL (15–50)

What is the most likely diagnosis?

A: antiphospholipid antibody syndrome ○

B: cryoglobulinaemia ○

C: mixed connective tissue disease ○

D: systemic lupus erythematosus ○

E: thrombotic thrombocytopenic purpura ○

Question 6 ⌄

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What is the most likely diagnosis?

Answers

A: antiphospholipid antibody syndrome
B: cryoglobulinaemia
C: mixed connective tissue disease
D: systemic lupus erythematosus
E: thrombotic thrombocytopenic purpura

Correct answer: A

Explanation

(75%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The event of a pulmonary embolism in a 34-year-old woman who also has livedo reticularis and a prolonged activated partial thromboplastin time suggests either primary antiphospholipid antibody syndrome or systemic lupus erythematosus (SLE) with secondary antiphospholipid antibody syndrome. The cold intolerance alludes to Raynaud's phenomenon.

The lymphopenia is more of a feature of SLE than primary antiphospholipid antibody syndrome. However, as the antinuclear antibodies are negative and there is no evidence of complement activation, SLE is ruled out. There is nothing in the history to suggest cryoglobulinaemia, mixed connective tissue disease or thrombotic thrombocytopenic purpura.

Question 7

A 19-year-old woman presented with a widespread skin eruption 2 weeks after having had a sore throat.

On examination, she had multiple, 5-mm diameter, scaly, erythematous papules over her trunk and limbs.

What is the most likely diagnosis?

A: atopic eczema ○

B: dermatitis artefacta ○

C: guttate psoriasis ○

D: lichen planus ○

E: pityriasis versicolor ○

Question 7

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Answers

A: atopic eczema
B: dermatitis artefacta
C: guttate psoriasis
D: lichen planus
E: pityriasis versicolor

Correct answer: C

Explanation

(81%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This young woman has developed an exanthem shortly after a sore throat. The description of the rash, in particular the size of the lesions, scaling and widespread distribution with relative sparing of the face, is typical of guttate psoriasis. The main differential diagnoses to consider in this setting are pityriasis rosea (which is also common in this age group and follows a sore throat) and secondary syphilis, but these options are not given. The other diseases given do not typically follow a sore throat, unless co-incidentally. Atopic eczema does not generally produce scaly papules. The papules in lichen planus are classically flat-topped and not scaly. Pityriasis versicolor presents with scaling and pigment change rather than papules. Dermatitis artefacta can present in many different ways but not as a widespread scaly rash, and should only be considered when other pathologies have been excluded.

Question 8

A 60-year-old man was admitted with a 3-day history of diarrhoea. A diagnosis of lung and peritoneal metastases from an unknown primary carcinoma had been made 4 months previously, and he had been receiving platinum-based combination chemotherapy. He had been discharged from hospital 5 days previously after an episode of neutropenic sepsis following his 2nd cycle of chemotherapy.

On examination, he was apyrexial, his pulse was 98 beats per minute and his BP was 110/65 mmHg lying. He looked dehydrated. His abdomen was soft but tender over the left iliac fossa.

Investigations:

haemoglobin	113 g/L (130–180)
white cell count	6.5 × 10^9/L (4.0–11.0)
neutrophil count	5.4 × 10^9/L (1.5–7.0)
platelet count	170 × 10^9/L (150–400)
CT scan of abdomen	thickened sigmoid colon

What is the most likely diagnosis?

A: cryptosporidiosis ○

B: flare-up of diverticular disease ○

C: ischaemic colitis ○

D: pseudomembranous colitis ○

E: tumour progression ○

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What is the most likely diagnosis?

Answers

A: cryptosporidiosis
B: flare-up of diverticular disease
C: ischaemic colitis
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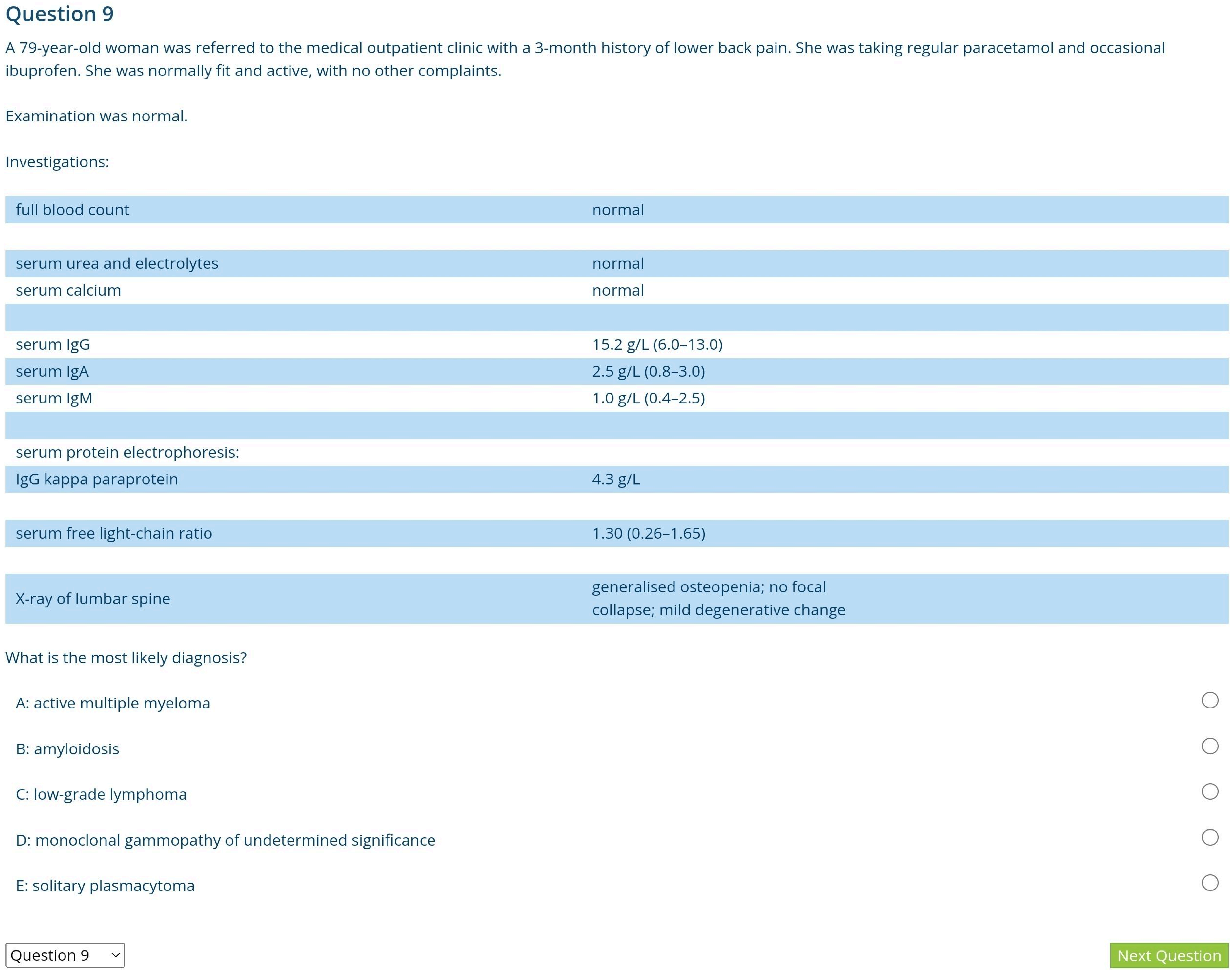
E: tumour progression

Correct answer: D

Explanation

(72%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has recently received potent, broad-spectrum antibiotics in a hospital setting. These risk factors, the CT findings and the timescale support a possible diagnosis of hospital-acquired infection such as Clostridium difficile, the causative organism of pseudomembranous colitis. Cryptosporidiosis would be an important differential diagnosis in more chronic immunosuppressed states (such as HIV infection), but is unlikely after just 2 cycles of solid tumour chemotherapy. Acute diarrhoea would be a very unusual symptom of progressive solid malignancy – even in patients with peritoneal disease. There are no additional features in the stem to suggest diverticular disease or ischaemic colitis in this patient.



Question 9

A 79-year-old woman was referred to the medical outpatient clinic with a 3-month history of lower back pain. She was taking regular paracetamol and occasional ibuprofen. She was normally fit and active, with no other complaints.

Examination was normal.

Investigations:

full blood count	normal
serum urea and electrolytes	normal
serum calcium	normal
serum IgG	15.2 g/L (6.0–13.0)
serum IgA	2.5 g/L (0.8–3.0)
serum IgM	1.0 g/L (0.4–2.5)
serum protein electrophoresis:	
IgG kappa paraprotein	4.3 g/L
serum free light-chain ratio	1.30 (0.26–1.65)
X-ray of lumbar spine	generalised osteopenia; no focal collapse; mild degenerative change

What is the most likely diagnosis?

A: active multiple myeloma ○

B: amyloidosis ○

C: low-grade lymphoma ○

D: monoclonal gammopathy of undetermined significance ○

E: solitary plasmacytoma ○

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What is the most likely diagnosis?

Answers

A: active multiple myeloma
B: amyloidosis
C: low-grade lymphoma
D: monoclonal gammopathy of undetermined significance
E: solitary plasmacytoma

Correct answer: D

Explanation

(92%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This individual has a low level IgG kappa paraprotein, with no evidence of end-organ damage (normal haemoglobin, serum calcium, serum creatinine and plain X-rays of skeleton), or immune paresis. Her serum free light chain ratio is normal. This is entirely in keeping with an IgG monoclonal gammopathy of undetermined significance.

AL amyloidosis is most commonly associated with renal or cardiac impairment, of which she has no evidence. A low-grade lymphoma is most likely to present with palpable lymphadenopathy or splenomegaly (the examination is normal here).

Active multiple myeloma is defined as myeloma with evidence of organ or tissue involvement such as bone disease (e.g. lytic lesions, vertebral collapse or fracture), hypercalcaemia, bone marrow failure (e.g. anaemia) or kidney failure. It is an indication for systemic anti-myeloma treatment. This patient does not have any features to suggest symptomatic myeloma. A plasmacytoma, by definition, is a solitary lump of plasma cells, usually detected on plain X-rays of skeleton and/or MR scan of thoracolumbar spine. There is nothing to suggest this here.

Question 10

A 24-year-old man presented with a 2-day history of fever and a generalised blistering rash. He had been taking prednisolone 20 mg daily for more than 2 weeks because of severe asthma. His son had had chickenpox 2 weeks previously.

On examination, he was low in mood. His temperature was 38.5°C, his BP was 118/76 mmHg and his respiratory rate was 14 breaths per minute. His oxygen saturation was 96% (94–98) breathing air. He had a widespread eruption consisting of vesicles and pustules. Examination of his chest showed a few wheezes but no crackles.

Investigations:

haemoglobin	128 g/L (130–180)
white cell count	15.2 × 10^9/L (4.0–11.0)
neutrophil count	13.8 × 10^9/L (1.5–7.0)
lymphocyte count	1.0 × 10^9/L (1.5–4.0)
platelet count	189 × 10^9/L (150–400)

chest X-ray	normal

What is the most appropriate next management step?

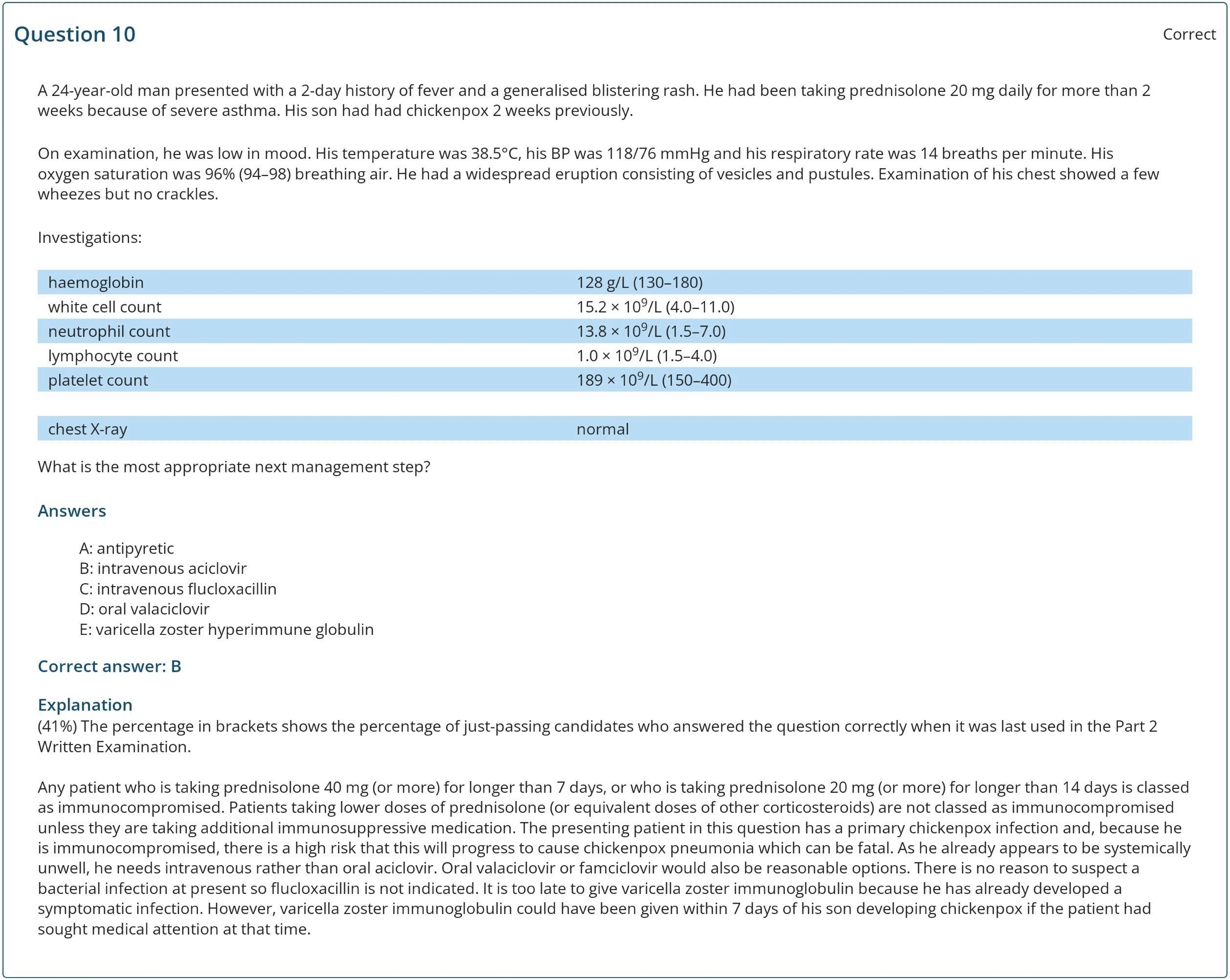
A: antipyretic ○

B: intravenous aciclovir ○

C: intravenous flucloxacillin ○

D: oral valaciclovir ○

E: varicella zoster hyperimmune globulin ○



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chest X-ray	normal

What is the most appropriate next management step?

Answers

A: antipyretic
B: intravenous aciclovir
C: intravenous flucloxacillin
D: oral valaciclovir
E: varicella zoster hyperimmune globulin

Correct answer: B

Explanation

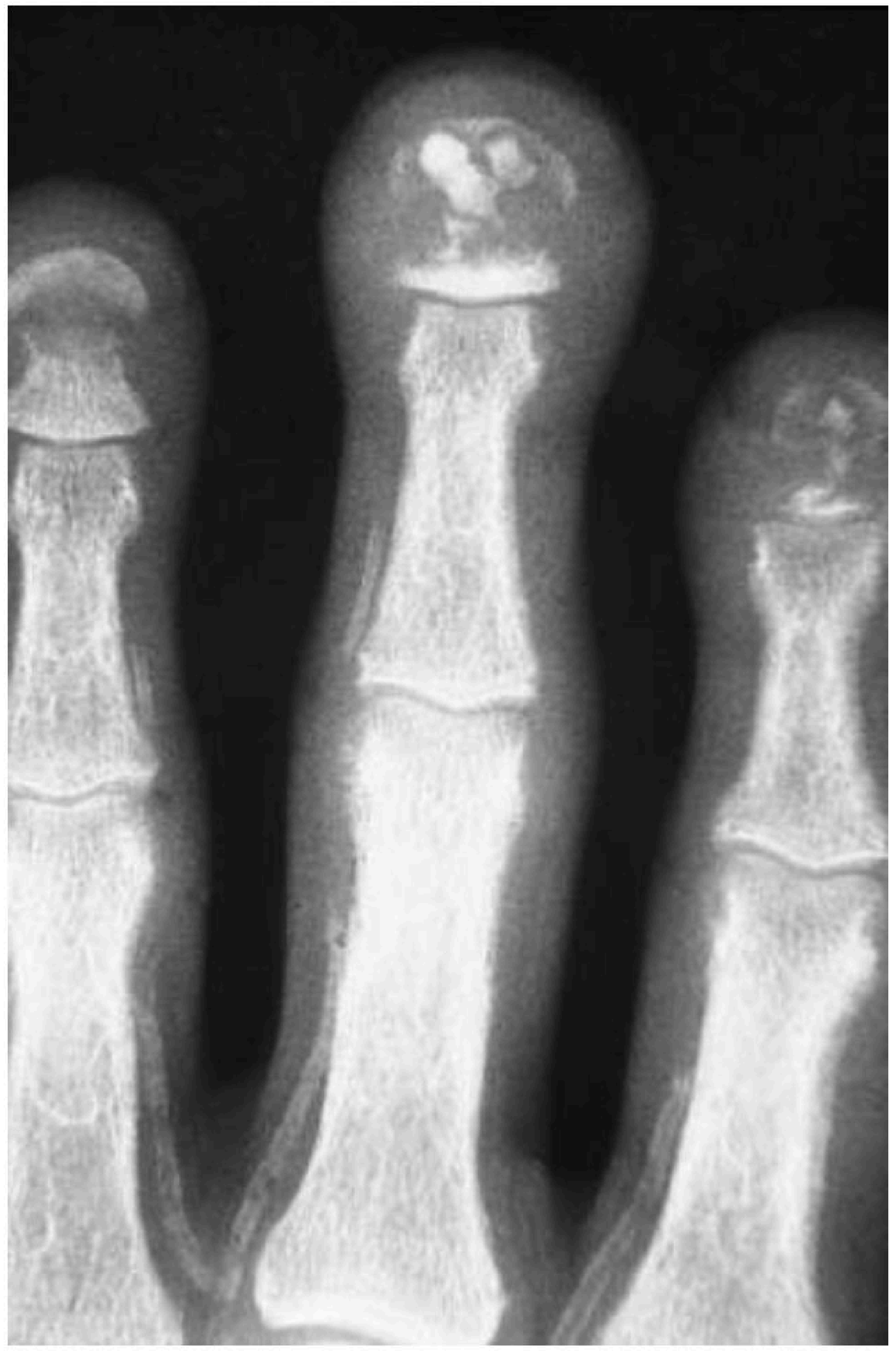
(41%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Any patient who is taking prednisolone 40 mg (or more) for longer than 7 days, or who is taking prednisolone 20 mg (or more) for longer than 14 days is classed as immunocompromised. Patients taking lower doses of prednisolone (or equivalent doses of other corticosteroids) are not classed as immunocompromised unless they are taking additional immunosuppressive medication. The presenting patient in this question has a primary chickenpox infection and, because he is immunocompromised, there is a high risk that this will progress to cause chickenpox pneumonia which can be fatal. As he already appears to be systemically unwell, he needs intravenous rather than oral aciclovir. Oral valaciclovir or famciclovir would also be reasonable options. There is no reason to suspect a bacterial infection at present so flucloxacillin is not indicated. It is too late to give varicella zoster immunoglobulin because he has already developed a symptomatic infection. However, varicella zoster immunoglobulin could have been given within 7 days of his son developing chickenpox if the patient had sought medical attention at that time.

Question 11

A 75-year-old man presented with widespread aches and pains. He had a 20-year history of haemodialysis for end-stage renal disease.

An X-ray of his hand was performed (see image).



What is the most likely diagnosis?

A: dialysis-related amyloidosis ○

B: gout ○

C: primary hyperparathyroidism ○

D: secondary hyperparathyroidism ○

E: systemic sclerosis ○

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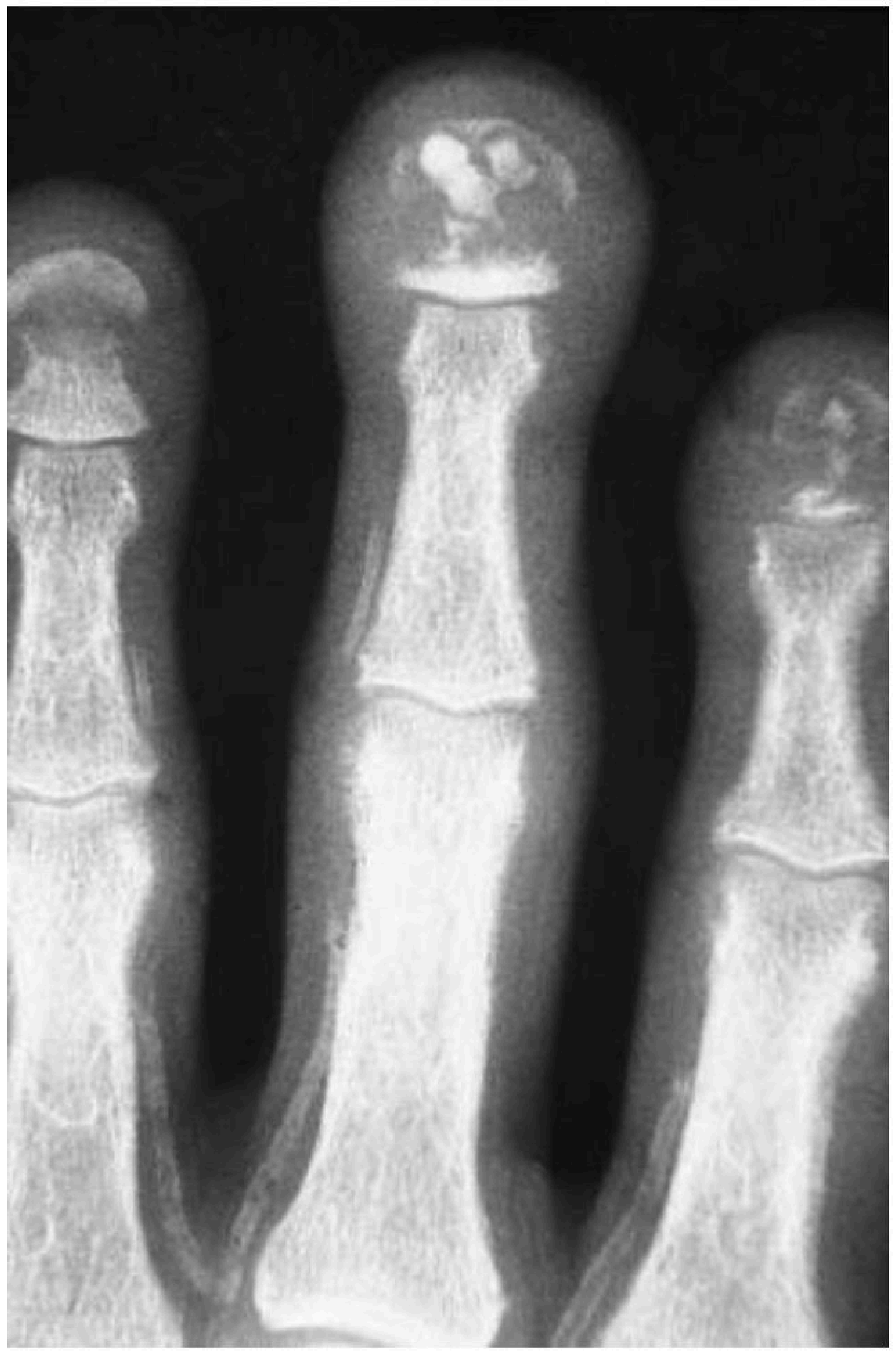
A 75-year-old man presented with widespread aches and pains. He had a 20-year history of haemodialysis for end-stage renal disease.

An X-ray of his hand was performed (see image).



What is the most likely diagnosis?

Answers

- A: dialysis-related amyloidosis
- B: gout
- C: primary hyperparathyroidism
- D: secondary hyperparathyroidism
- E: systemic sclerosis

Correct answer: D

Explanation

(61%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The image shows destruction of the terminal phalanges, and subperiosteal erosions in the first and second phalanges. These features are consistent with hyperparathyroidism. There is incidental vascular calcification in the digital arteries which is common in end-stage renal disease. As the patient is having haemodialysis, the most likely diagnosis is secondary hyperparathyroidism as a result of deficient activation of vitamin D by the kidneys. Gout would result in destructive arthritis, amyloidosis would not cause bone destruction and systemic sclerosis would result in soft-tissue loss and probable calcinosis.

Question 12

A 72-year-old man presented with a 4-year history of acute intermittent pain and swelling of the knees. The problem affected one knee at a time, and each episode lasted about a week. He took naproxen for the pain. His serum urate concentration was measured during one of the attacks and was found to be normal. He had drunk 24–28 units of alcohol per week for 30 years. There was no family history of diabetes mellitus.

On examination, his BMI was 34.0 kg/m^2 (18.0–25.0). His pulse was 64 beats per minute, and his BP was 110/70 mmHg. His liver was enlarged to 5 cm below the costal margin and his spleen to 3 cm. The metacarpophalangeal joints of the index and middle fingers in both hands were swollen. Urinalysis showed glucose 3+.

Investigations:

haemoglobin	165 g/L (130–180)
white cell count	9.5 × 10^9/L (4.0–11.0)
platelet count	135 × 10^9/L (150–400)

serum sodium	128 mmol/L (137–144)
serum potassium	3.1 mmol/L (3.5–4.9)
serum urea	3.5 mmol/L (2.5–7.0)
serum creatinine	56 μmol/L (60–110)
serum albumin	31 g/L (37–49)
serum total bilirubin	32 μmol/L (1–22)
serum alanine aminotransferase	133 U/L (5–35)
serum aspartate aminotransferase	110 U/L (1–31)
fasting plasma glucose	13.4 mmol/L (3.0–6.0)

What is the most likely diagnosis?

A: alcohol-related cirrhosis ○

B: haemochromatosis ○

C: palindromic rheumatism ○

D: rheumatoid arthritis ○

E: sarcoidosis ○

Question 12 ⌄

Next Question

Question 12

Incorrect

A 72-year-old man presented with a 4-year history of acute intermittent pain and swelling of the knees. The problem affected one knee at a time, and each episode lasted about a week. He took naproxen for the pain. His serum urate concentration was measured during one of the attacks and was found to be normal. He had drunk 24–28 units of alcohol per week for 30 years. There was no family history of diabetes mellitus.

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serum alanine aminotransferase	133 U/L (5–35)
serum aspartate aminotransferase	110 U/L (1–31)
fasting plasma glucose	13.4 mmol/L (3.0–6.0)

What is the most likely diagnosis?

Answers

A: alcohol-related cirrhosis
B: haemochromatosis
C: palindromic rheumatism
D: rheumatoid arthritis
E: sarcoidosis

Correct answer: B

Explanation

(81%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This is a question about episodic inflammatory arthritis. The most common reason for this would be crystal arthritis, either gout or pseudogout. The serum uric acid is normal, and it can be normal in both of the conditions. The history of alcohol intake is perhaps tipping us towards gout as being a more likely possibility. However, when we get further information that this man also has metacarpophalangeal involvement with hepatosplenomegaly and type 2 diabetes mellitus, it does point us in the direction of this being more systemic problem.

Going through the options, the only plausible one is haemochromatosis, which can produce an episodic arthritis of this type. Alcohol-related cirrhosis does not have a definite association with any crystal arthritis. Palindromic rheumatism and rheumatoid arthritis are symmetrical. The arthritis of sarcoidosis is typically in a large joint, and in a younger age group. Therefore, the best answer is haemochromatosis leading to chondrocalcinosis and pseudogout.

Question 13

A 42-year-old man was admitted to hospital with severe abdominal pain. His alcohol intake was 18 units per week. His serum amylase concentration was raised at 1346 U/L (60–180), and a diagnosis of acute pancreatitis was made.

There was no evidence of gallstones. He made an uncomplicated recovery.

Investigations (after recovery):

fasting plasma glucose	5.7 mmol/L (3.0–6.0)
serum cholesterol	5.8 mmol/L (<5.2)
serum non-HDL cholesterol	3.41 mmol/L (<3.36)
serum HDL cholesterol	0.96 mmol/L (>1.55)
fasting serum triglycerides	22.63 mmol/L (0.45–2.30)

What is the most appropriate treatment to reduce his risk of recurrent pancreatitis?

A: atorvastatin ○

B: ciprofibrate ○

C: ezetimibe ○

D: nicotinic acid ○

E: omega-3 acid ethyl esters ○

Question 13

Correct

A 42-year-old man was admitted to hospital with severe abdominal pain. His alcohol intake was 18 units per week. His serum amylase concentration was raised at 1346 U/L (60–180), and a diagnosis of acute pancreatitis was made.

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What is the most appropriate treatment to reduce his risk of recurrent pancreatitis?

Answers

A: atorvastatin
B: ciprofibrate
C: ezetimibe
D: nicotinic acid
E: omega-3 acid ethyl esters

Correct answer: B

Explanation

(65%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man’s presentation of acute pancreatitis was most likely due to hypertriglyceridaemia; he does not have evidence of gallstones or diabetes, his alcohol intake is not excessive and his non-HDL cholesterol is only moderately elevated.

All the drugs, except ezetimibe, lower triglycerides to some degree, but fibrates are most effective and thus most appropriate.

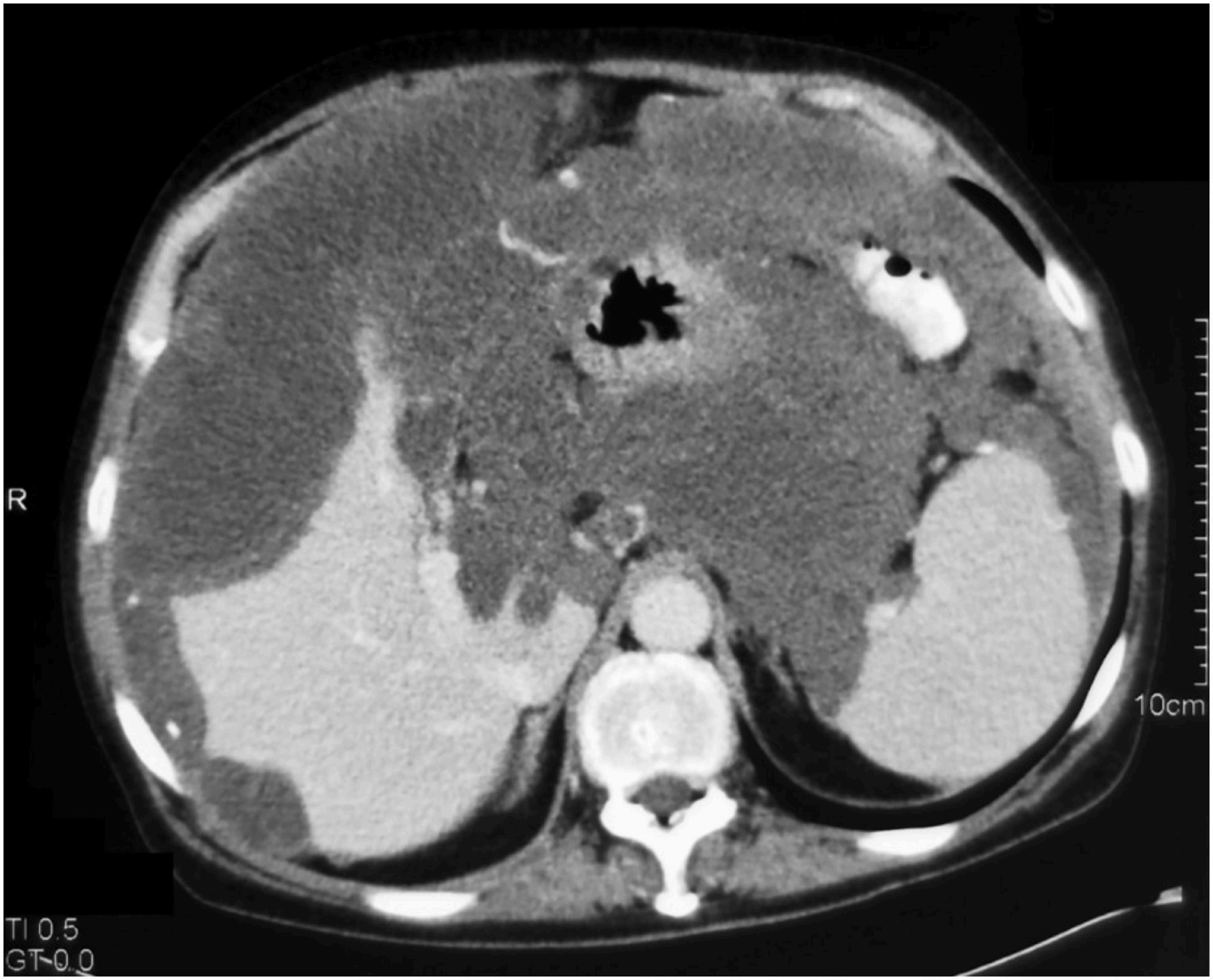
Question 14

A 43-year-old woman was investigated for increasing abdominal girth, nausea and alteration of bowel habit.

On examination, her abdomen was distended and generally dull to percussion.

Investigations:

CT scan of abdomen	see image



What is the most likely explanation for the CT appearance?

- A: ascites ○
- B: constipation ○
- C: hepatocellular carcinoma ○
- D: pseudomyxoma peritonei ○
- E: retroperitoneal haemorrhage ○

Question 14

Next Question

Question 14

Incorrect

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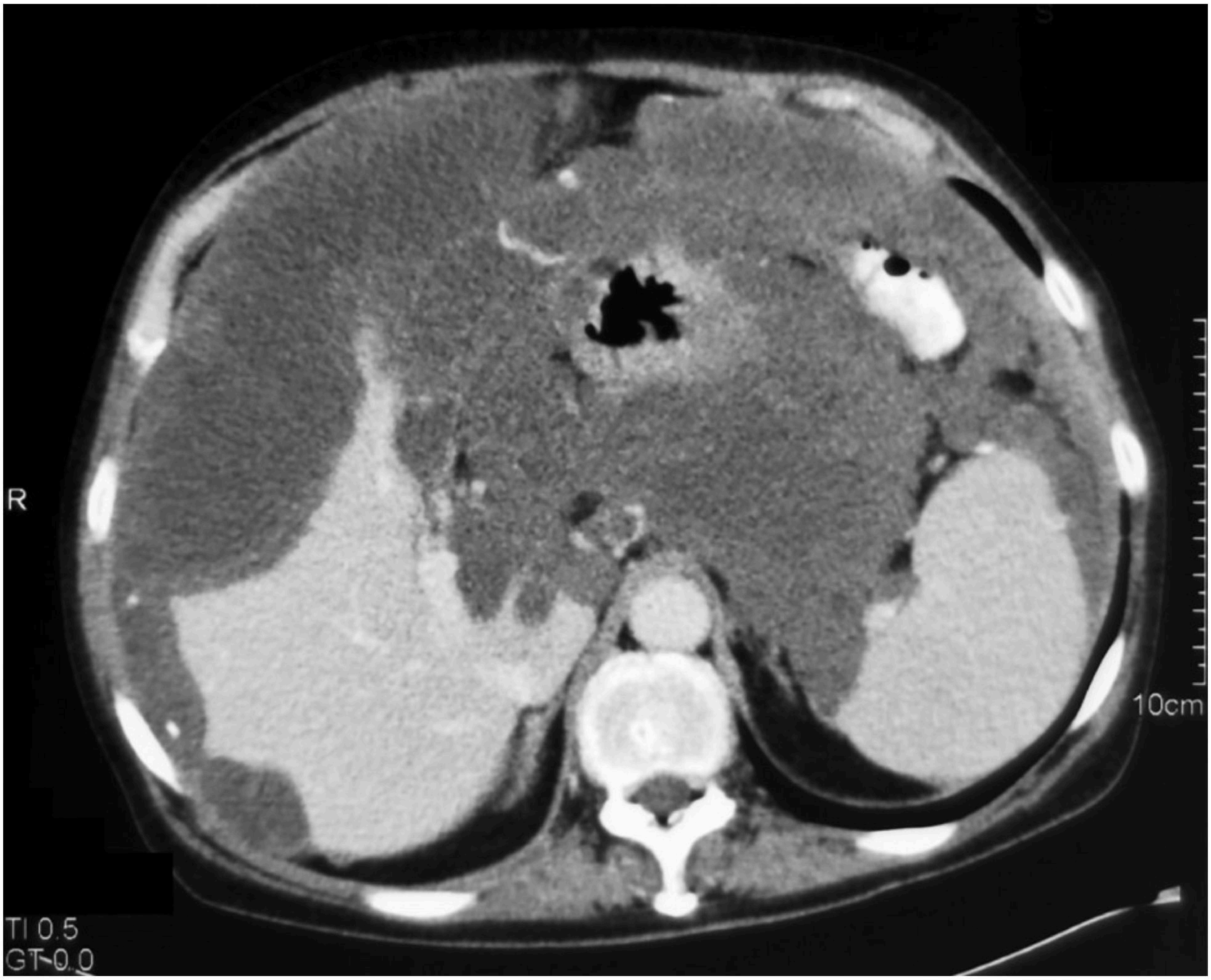
Investigations:

CT scan of abdomen	see image



What is the most likely explanation for the CT appearance?

Answers

- A: ascites
- B: constipation
- C: hepatocellular carcinoma
- D: pseudomyxoma peritonei
- E: retroperitoneal haemorrhage

Correct answer: D

Explanation

(57%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This is a difficult question as pseudomyxoma peritonei is extremely rare and such an image is highly unusual. However, the correct answer can be deduced by process of elimination. Ascites would have a gravitational distribution and could not be loculated around the liver in this way. Constipation is clearly incorrect as this could not produce these extraluminal changes. Hepatocellular carcinoma can produce multifocal intrahepatic lesions, but in this image, most of the abnormalities can be clearly seen to be compressing the liver from the outside suggesting an extrahepatic cause. Retroperitoneal haemorrhage of sufficient magnitude to cause these changes would not be compatible with the patient’s history.

Question 15

A 65-year-old man had a 10-year history of dialysis-dependent end-stage renal disease caused by renovascular disease. He began taking warfarin because of recurrent arteriovenous fistula thrombosis.

One month later, he presented with livedo reticularis on his trunk, and areas of painful ulceration on his shins.

Investigations:

haemoglobin	102 g/L (130–180)
white cell count	5.4 × 10^9/L (4.0–11.0)
eosinophil count	0.78 × 10^9/L (0.04–0.40)
platelet count	478 × 10^9/L (150–400)
INR	1.9
serum corrected calcium	2.58 mmol/L (2.20–2.60)
serum phosphate	1.90 mmol/L (0.80–1.45)
plasma parathyroid hormone	18.5 pmol/L (0.9–5.4)
anticardiolipin IgG antibodies:	32 U/mL (<10)
anticardiolipin IgM antibodies	24 U/mL (<10)

What is the most likely diagnosis?

A: antiphospholipid antibody syndrome ○

B: calciphylaxis ○

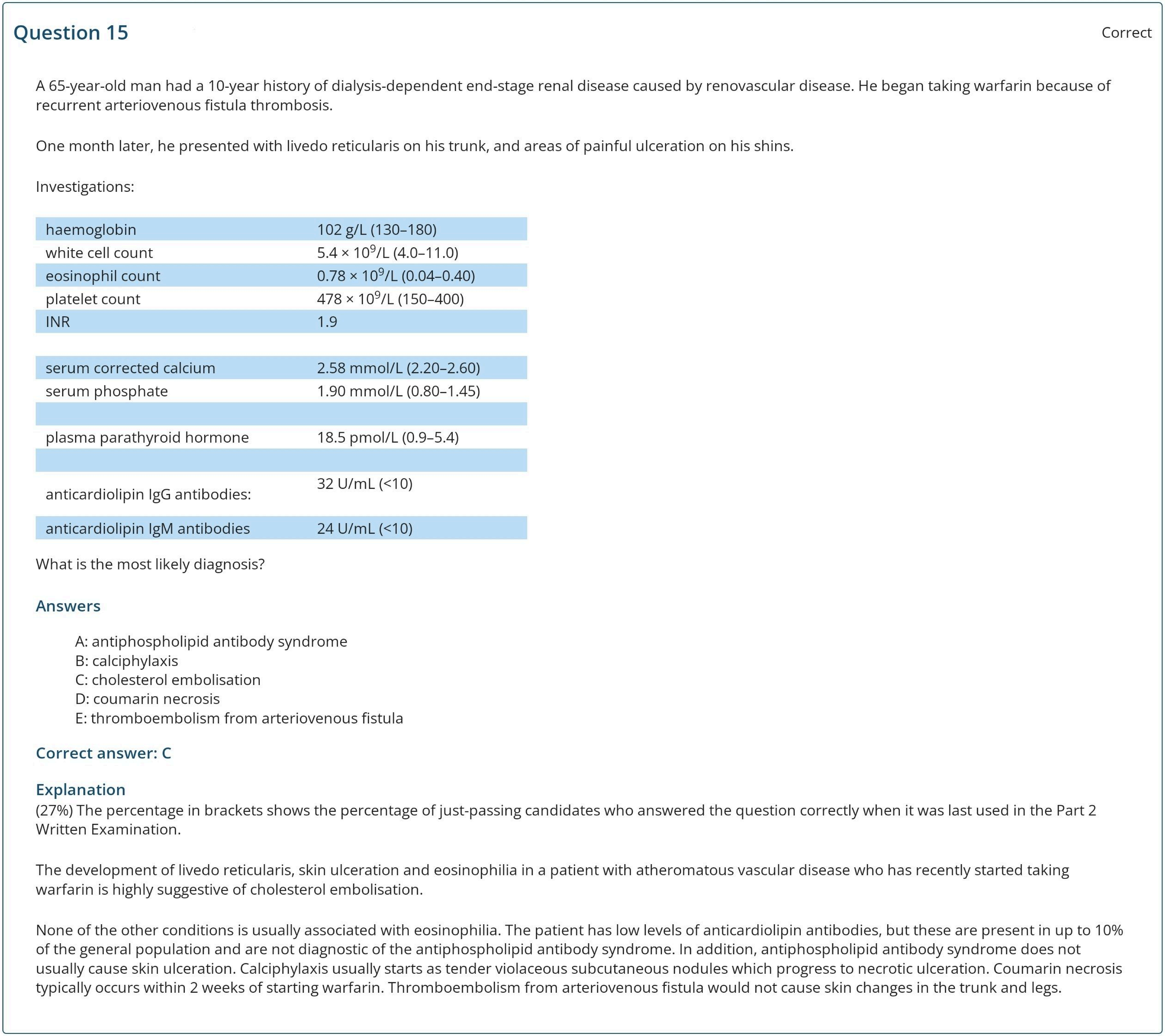
C: cholesterol embolisation ○

D: coumarin necrosis ○

E: thromboembolism from arteriovenous fistula ○

Question 15 ⌄

Next Question



Question 15

Correct

A 65-year-old man had a 10-year history of dialysis-dependent end-stage renal disease caused by renovascular disease. He began taking warfarin because of recurrent arteriovenous fistula thrombosis.

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anticardiolipin IgG antibodies:	32 U/mL (<10)
anticardiolipin IgM antibodies	24 U/mL (<10)

What is the most likely diagnosis?

Answers

A: antiphospholipid antibody syndrome
B: calciphylaxis
C: cholesterol embolisation
D: coumarin necrosis
E: thromboembolism from arteriovenous fistula

Correct answer: C

Explanation

(27%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The development of livedo reticularis, skin ulceration and eosinophilia in a patient with atheromatous vascular disease who has recently started taking warfarin is highly suggestive of cholesterol embolisation.

None of the other conditions is usually associated with eosinophilia. The patient has low levels of anticardiolipin antibodies, but these are present in up to 10% of the general population and are not diagnostic of the antiphospholipid antibody syndrome. In addition, antiphospholipid antibody syndrome does not usually cause skin ulceration. Calciphylaxis usually starts as tender violaceous subcutaneous nodules which progress to necrotic ulceration. Coumarin necrosis typically occurs within 2 weeks of starting warfarin. Thromboembolism from arteriovenous fistula would not cause skin changes in the trunk and legs.

Question 16

A 27-year-old woman attended the emergency department with a 1-week history of progressive dyspnoea and cough, and a 2-day history of left basal thoracic pain on inspiration and haemoptysis. She had a history of bronchiectasis. She was a non-smoker. She had recently returned from a holiday in New Zealand, and was taking co-amoxiclav and prednisolone prescribed by her general practitioner for an exacerbation of her bronchiectasis. She was a non-smoker.

On examination, she was thin. Her temperature was 37.3°C, her pulse was 115 beats per minute and regular, her BP was 128/78 mmHg and her respiratory rate was 22 breaths per minute. Further examination was normal.

Investigations:

haemoglobin	157 g/L (115–165)
white cell count	18.0×10^9/L (4.0–11.0)
serum CRP	68 mg/L (<10)
arterial blood gases, breathing air:	
PO_2	8.9 kPa (11.3–12.6)
PCO_2	4.9 kPa (4.7–6.0)
pH	7.40 (7.35–7.45)
H^+	40 nmol/L (35–45)
bicarbonate	22 mmol/L (21–29)
ECG	sinus tachycardia
chest X-ray	cystic changes at left base

What is the most appropriate next investigation?

A: CT pulmonary angiography ○

B: D-dimer ○

C: echocardiography ○

D: ultrasound scan of legs and pelvis ○

E: ventilation/perfusion isotope lung scan ○

Question 16 ⌄

Next Question

Question 16

Incorrect

A 27-year-old woman attended the emergency department with a 1-week history of progressive dyspnoea and cough, and a 2-day history of left basal thoracic pain on inspiration and haemoptysis. She had a history of bronchiectasis. She was a non-smoker. She had recently returned from a holiday in New Zealand, and was taking co-amoxiclav and prednisolone prescribed by her general practitioner for an exacerbation of her bronchiectasis. She was a non-smoker.

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bicarbonate	22 mmol/L (21–29)
ECG	sinus tachycardia
chest X-ray	cystic changes at left base

What is the most appropriate next investigation?

Answers

A: CT pulmonary angiography
B: D-dimer
C: echocardiography
D: ultrasound scan of legs and pelvis
E: ventilation/perfusion isotope lung scan

Correct answer: A

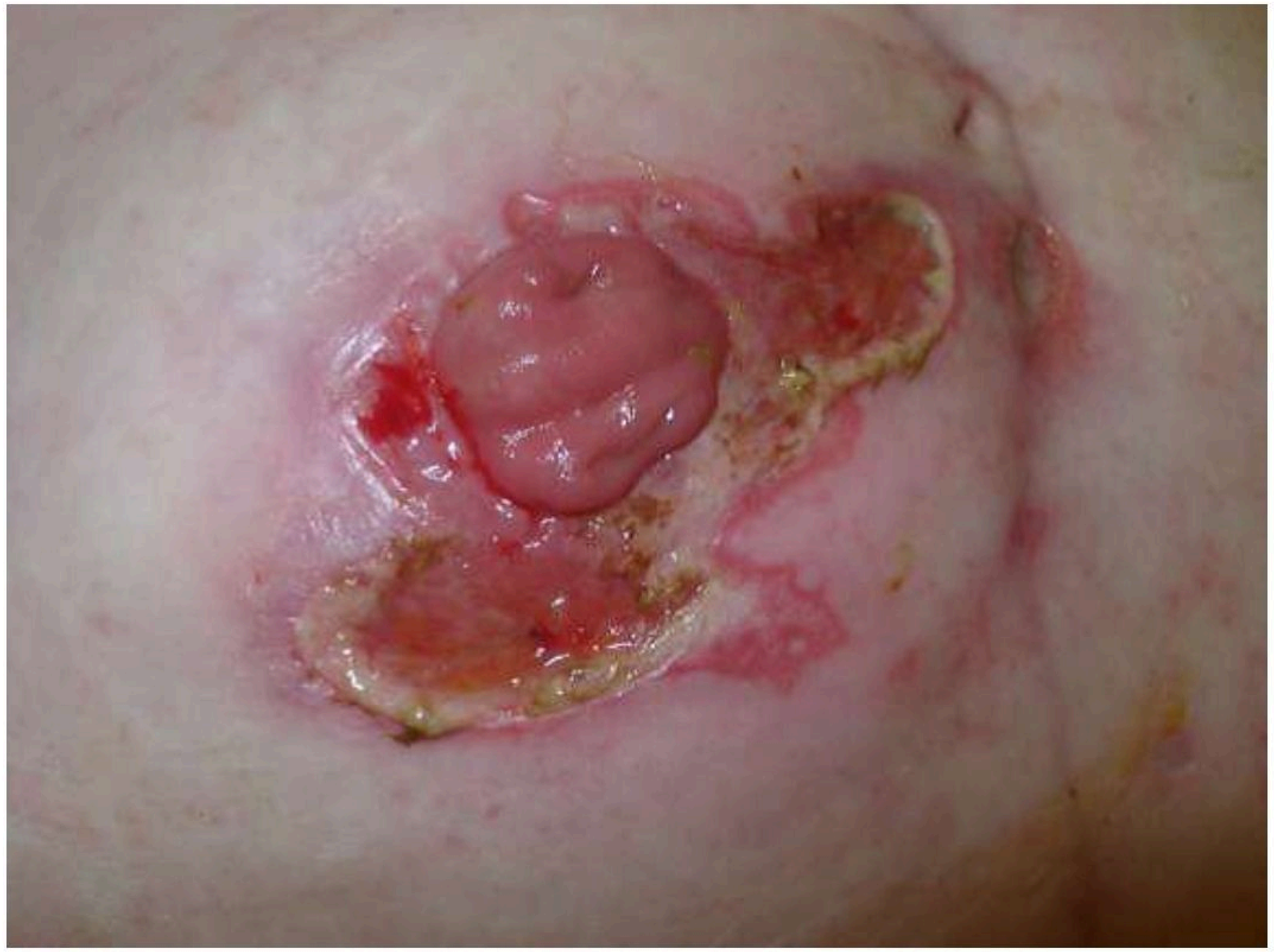
Explanation

(79%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The main differential diagnosis lies between a pulmonary embolism and an exacerbation of her bronchiectasis with a developing left lower lobe pneumonia. A CT pulmonary angiography (CTPA) allows imaging of both the pulmonary vasculature and the lung parenchyma and is the correct answer. A D-dimer is non-specific and used as a test of exclusion when thromboembolism is considered but is not a diagnostic test, An echocardiogram is unlikely to show any right ventricular dilatation or intracardiac thrombus in the absence of cardiovascular collapse. An ultrasound scan will at best give circumstantial evidence of thromboembolic disease. A ventilation/perfusion isotope lung scan will be indeterminate at best in the context of underlying airways disease/bronchiectasis and thus will not help with a definite diagnosis of thromboembolic disease.

Question 17

A 30-year-old woman had a 3-year history of Crohn’s disease, which had required the formation of an ileostomy. She presented with a sore area around the stoma (see image). This was causing problems with adhesion of the stoma pouch.



What is the most appropriate treatment?

A: oral flucloxacillin ○

B: oral prednisolone ○

C: radiotherapy ○

D: surgical debridement ○

E: topical terbinafine ○

Question 17 ⌄

Next Question

Question 17

Incorrect

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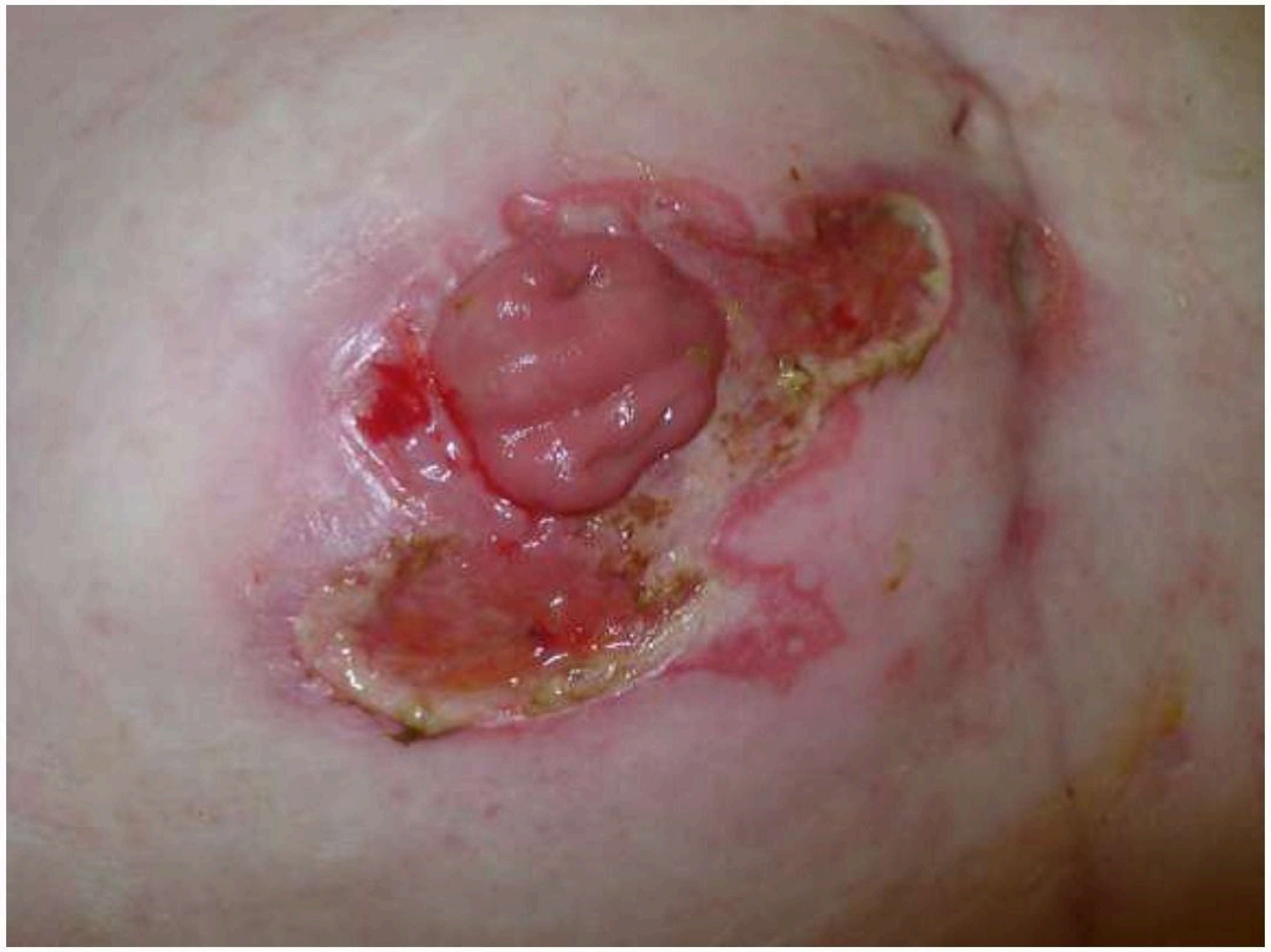

What is the most appropriate treatment?

Answers

- A: oral flucloxacillin
- B: oral prednisolone
- C: radiotherapy
- D: surgical debridement
- E: topical terbinafine

Correct answer: B

Explanation

(30%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The image shows well-demarcated, full-thickness skin ulceration around the stoma. There is a little slough peripherally and no overt features of bacterial infection. The ulcer edges have a punched-out appearance and the wound edges reveal violaceous erythema. These are features of pyoderma gangrenosum, which is a recognised complication of Crohn's disease. The involvement of peristomal skin is quite common, possibly representing a Koebner phenomenon. Initial treatment is with oral prednisolone.

Question 18

A 48-year-old woman complained of leg weakness and tenderness, which was worse on exercise.

Investigations:

haemoglobin	118 g/L (115–165)
MCV	101 fL (80–96)
serum creatine kinase	740 U/L (24–170)
anti-thyroid peroxidase antibodies	positive
anti-gastric parietal cell antibodies	positive
antinuclear antibodies	negative

What is the most likely diagnosis?

A: alcohol excess ○

B: folate deficiency ○

C: hypothyroidism ○

D: pernicious anaemia ○

E: polymyositis ○

Question 18 ⌄

Next Question

Question 18

No Answer Given

Incorrect

A 48-year-old woman complained of leg weakness and tenderness, which was worse on exercise.

Investigations:

haemoglobin	118 g/L (115–165)
MCV	101 fL (80–96)
serum creatine kinase	740 U/L (24–170)
anti-thyroid peroxidase antibodies	positive
anti-gastric parietal cell antibodies	positive
antinuclear antibodies	negative

What is the most likely diagnosis?

Answers

A: alcohol excess
B: folate deficiency
C: hypothyroidism
D: pernicious anaemia
E: polymyositis

Correct answer: C

Explanation

(52%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The positive antibodies suggest autoimmune endocrinopathy. Of the two options, pernicious anaemia would not cause an elevated creatine kinase (CK). Polymyositis is much less likely with a CK less than 1000; folate deficiency and alcohol excess might explain the raised MCV and weakness but the most likely diagnosis is hypothyroidism. CK is modestly elevated (<10 times upper limit of normal) in up to 90% of untreated patients, and up to 79% complain of muscle symptoms. A raised MCV may represent concomitant pernicious anaemia, but also occurs in about 10% of hypothyroid patients who have normal vitamin B_{12} levels for reasons that are unclear. Her symptoms should improve with thyroid replacement.

Question 19

An 82-year-old woman presented to the emergency department following a fall. She did not have any loss of consciousness. She had a history of type 2 diabetes mellitus, osteoarthritis of her hips and spine, diverticular disease and a hiatus hernia. Her medication comprised gliclazide, ibuprofen, omeprazole, ispaghula husk and paracetamol.

On examination, she appeared well and had no signs of injury. A 24-hour ECG showed normal sinus rhythm throughout, with a daytime heart rate of 60–100 beats per minute and a night-time heart rate of 42–58 beats per minute. There were frequent ventricular and supraventricular ectopic beats, one short run (5 beats) of atrial fibrillation and one pause of 2 seconds' duration at 05.30 h. No symptoms were noted.

What is the most appropriate management?

A: amiodarone ○

B: digoxin ○

C: no intervention ○

D: permanent pacemaker ○

E: warfarin ○

Question 19 ⌄

Next Question

Question 19

No Answer Given

Incorrect

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What is the most appropriate management?

Answers

A: amiodarone
B: digoxin
C: no intervention
D: permanent pacemaker
E: warfarin

Correct answer: C

Explanation

(55%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

No intervention is the correct answer here as the underlying rhythm is normal sinus rhythm, there is no significant paroxysmal atrial fibrillation (PAF) and the pause is less than 3 seconds (noted to be without symptoms or patient sleeping). Amiodarone and digoxin are not indicated as the underlying heart rhythm is sinus rhythm. The short run (5 beats) of atrial fibrillation without symptoms is not significant. Furthermore, the relative nocturnal bradycardia and 2-second pause at 05.30 h would be a contraindication to the use of either of these drugs. The short burst of atrial fibrillation is a common finding in the elderly and is not the same as PAF (which would require at least 30 seconds) and so is not an indication for oral anticoagulation. A permanent pacemaker would be only indicated for a pause of greater than 3 seconds in someone who is awake with or without symptoms or for a pause of less than 3 seconds in someone with definite symptoms.

Question 20

A 21-year-old man was admitted to hospital with a 5-day history of fevers and vomiting. He also complained of knee and ankle pains. He was homosexual, and had last had receptive anal intercourse 6 weeks previously.

On examination, he had a widespread erythematous macular rash. His temperature was 37.5°C, his pulse was 85 beats per minute and his BP was 115/60 mmHg. He had no joint swelling.

Investigations:

haemoglobin	147 g/L (130–180)
white cell count	6.5 × 10^9/L (4.0–11.0)
serum urea	4.3 mmol/L (2.5–7.0)
serum total bilirubin	50 μmol/L (1–22)
serum alanine aminotransferase	687 U/L (5–35)
serum alkaline phosphatase	110 U/L (45–105)
serum gamma glutamyl transferase	89 U/L (<50)

What is the most likely diagnosis?

A: acute hepatitis B ○

B: acute hepatitis C ○

C: acute HIV infection ○

D: gonococcal bacteraemia ○

E: secondary syphilis ○

Question 20

No Answer Given

Incorrect

A 21-year-old man was admitted to hospital with a 5-day history of fevers and vomiting. He also complained of knee and ankle pains. He was homosexual, and had last had receptive anal intercourse 6 weeks previously.

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serum alkaline phosphatase	110 U/L (45–105)
serum gamma glutamyl transferase	89 U/L (<50)

What is the most likely diagnosis?

Answers

A: acute hepatitis B
B: acute hepatitis C
C: acute HIV infection
D: gonococcal bacteraemia
E: secondary syphilis

Correct answer: A

Explanation

(32%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient's blood results suggest that he has acute hepatitis. All of the answers are plausible but acute hepatitis is much more likely to be caused by one of the hepatitis viruses than by other sexually transmitted infections. Hepatitis B virus is far more commonly transmitted by homosexual anal intercourse than hepatitis C virus. In the UK, intravenous drug use is the most important current risk factor for recent hepatitis C virus infection

Question 21

A 62-year-old man presented with a 2-day history of pleuritic right lower chest pain associated with a cough productive of red-brown sputum. He had a 1-year history of microscopic polyangiitis, which had initially presented with pulmonary haemorrhage and rapidly progressive glomerulonephritis. He had responded well to plasma exchange, methylprednisolone and cyclophosphamide before being switched to azathioprine at 3 months. At his clinic visit 3 weeks previously, his serum CRP concentration had been 5 mg/L (<10) and his eGFR (MDRD) was 28 mL/min/1.73 m^2 (>60). His current medication was prednisolone 7.5 mg daily and azathioprine 100 mg daily.

On examination, he was comfortable at rest. His temperature was 37.8°C, his BP was 106/78 mmHg and his respiratory rate was 18 breaths per minute. He had bronchial breathing and a pleural rub at his right lung base but no crackles.

Investigations:

haemoglobin	120 g/L (130–180)
white cell count	9.4 × 10^9/L (4.0–11.0)
platelet count	256 × 10^9/L (150–400)
eGFR (MDRD)	26 mL/min/1.73 m^2 (>60)
serum CRP	56 mg/L (<10)
arterial blood gases, breathing air:	
PO_2	10.6 kPa (11.3–12.6)
PCO_2	4.2 kPa (4.7–6.0)
pH	7.44 (7.35–7.45)
H^+	36 nmol/L (35–45)
bicarbonate	18 mmol/L (21–29)
chest X-ray	patchy shadowing at right base

What is the most appropriate treatment?

A: intravenous cefotaxime and clarithromycin ○

B: intravenous cefotaxime, clarithromycin and co-trimoxazole ○

C: intravenous clarithromycin, amoxicillin and co-trimoxazole ○

D: oral amoxicillin and clarithromycin ○

E: oral amoxicillin, clarithromycin and co-trimoxazole ○

Question 21

Next Question

Question 21

No Answer Given

Incorrect

A 62-year-old man presented with a 2-day history of pleuritic right lower chest pain associated with a cough productive of red-brown sputum. He had a 1-year history of microscopic polyangiitis, which had initially presented with pulmonary haemorrhage and rapidly progressive glomerulonephritis. He had responded well to plasma exchange, methylprednisolone and cyclophosphamide before being switched to azathioprine at 3 months. At his clinic visit 3 weeks previously, his serum CRP concentration had been 5 mg/L (<10) and his eGFR (MDRD) was 28 mL/min/1.73 m^2 (>60). His current medication was prednisolone 7.5 mg daily and azathioprine 100 mg daily.

On examination, he was comfortable at rest. His temperature was 37.8°C, his BP was 106/78 mmHg and his respiratory rate was 18 breaths per minute. He had bronchial breathing and a pleural rub at his right lung base but no crackles.

Investigations:

haemoglobin	120 g/L (130–180)
white cell count	9.4 × 10^9/L (4.0–11.0)
platelet count	256 × 10^9/L (150–400)
eGFR (MDRD)	26 mL/min/1.73 m^2 (>60)
serum CRP	56 mg/L (<10)
arterial blood gases, breathing air:	
PO_2	10.6 kPa (11.3–12.6)
PCO_2	4.2 kPa (4.7–6.0)
pH	7.44 (7.35–7.45)
H^+	36 nmol/L (35–45)
bicarbonate	18 mmol/L (21–29)
chest X-ray	patchy shadowing at right base

What is the most appropriate treatment?

Answers

A: intravenous cefotaxime and clarithromycin
B: intravenous cefotaxime, clarithromycin and co-trimoxazole
C: intravenous clarithromycin, amoxicillin and co-trimoxazole
D: oral amoxicillin and clarithromycin
E: oral amoxicillin, clarithromycin and co-trimoxazole

Correct answer: D

Explanation

(42%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This scenario relates to a presentation of community-acquired pneumonia (CAP). The caveat is the man's current immunosuppressive treatment for microscopic polyangiitis. Nevertheless, the patient is unlikely to have a fungal infection and co-trimoxazole is not required as part of his initial treatment regimen. The answer to this question is based on guidelines for managing CAP which are available from the BTS (http://www.brit-thoracic.org.uk/guidelines/pneumonia-guidelines.aspx)). Both amoxicillin and a macrolide are advised due to the severity of the presentation. Intravenous cephalosporins are rarely used in the treatment of CAP because of their association with *Clostridium difficile* infection.

Question 22

A 32-year-old cyclist had noticed increasingly frequent "flickering" of his limb muscles, particularly the calves, and reported a 3-month history of occasional cramps.

On examination, he had widespread fasciculations in his arms, forearms and calves. Power was normal in all limbs. His deep tendon reflexes were normal, and he had no sensory signs.

What is the most likely diagnosis?

A: benign fasciculations ○

B: McArdle syndrome ○

C: motor neurone disease ○

D: myotonic dystrophy ○

E: polymyositis ○

Question 22

No Answer Given

Incorrect

A 32-year-old cyclist had noticed increasingly frequent "flickering" of his limb muscles, particularly the calves, and reported a 3-month history of occasional cramps.

On examination, he had widespread fasciculations in his arms, forearms and calves. Power was normal in all limbs. His deep tendon reflexes were normal, and he had no sensory signs.

What is the most likely diagnosis?

Answers

A: benign fasciculations
B: McArdle syndrome
C: motor neurone disease
D: myotonic dystrophy
E: polymyositis

Correct answer: A

Explanation

(75%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

In motor neurone disease, fasciculations are associated with weakness and the clinical disorder presents in one limb, not all over. There may be fasciculation and weakness in one limb and some fasciculations elsewhere, but not as widespread as this.

McArdle syndrome causes cramps on initial exertion, but no fasciculations; myotonic dystrophy has delayed relaxation following sustained exertion but no fasciculations and polymyositis has neither cramps nor fasciculations.

One might wonder about neuromyotonia in a patient with prominent cramps, although not in a patient presenting with fasciculations. Thyrotoxicosis and anxiety should also be considered.

Question 23

A 45-year-old woman was admitted with breathlessness and malaise. She had a 5-year history of rheumatoid arthritis and was taking an NSAID. She had a 20 pack-year smoking history. Over the next 10 days, she had a persistent pyrexia that was unresponsive to broad-spectrum antibiotics.

On examination, there were rheumatoid changes in her hands and coarse inspiratory crackles over both lung fields.

Investigations (10 days after admission):

haemoglobin	92 g/L (115–165)
white cell count	12.8 × 10^9/L (4.0–11.0)
platelet count	472 × 10^9/L (150–400)
ESR	83 mm/1st h (<20)
serum albumin	33 g/L (37–49)
arterial blood gases, breathing air:	
PO_2	8.8 kPa (11.3–12.6)
PCO_2	4.5 kPa (4.7–6.0)
pH	7.40 (7.35–7.45)
H^+	40 nmol/L (35–45)
bicarbonate	22 mmol/L (21–29)
chest X-ray	right mid-zone and left lower-zone consolidation (unchanged since admission)

What is the most likely diagnosis?

- A: aspiration pneumonia ○
- B: cryptogenic organising pneumonia ○
- C: pulmonary tuberculosis ○
- D: rheumatoid lung disease ○
- E: thromboembolic disease ○

Question 23

Next Question

Question 23

No Answer Given

Incorrect

A 45-year-old woman was admitted with breathlessness and malaise. She had a 5-year history of rheumatoid arthritis and was taking an NSAID. She had a 20 pack-year smoking history. Over the next 10 days, she had a persistent pyrexia that was unresponsive to broad-spectrum antibiotics.

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H^+	40 nmol/L (35–45)
bicarbonate	22 mmol/L (21–29)
chest X-ray	right mid-zone and left lower-zone consolidation (unchanged since admission)

What is the most likely diagnosis?

Answers

A: aspiration pneumonia
B: cryptogenic organising pneumonia
C: pulmonary tuberculosis
D: rheumatoid lung disease
E: thromboembolic disease

Correct answer: B

Explanation

(65%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman has bilateral mid- and lower-zone findings on examination and on the chest X-ray; this makes aspiration pneumonia unlikely as this usually gives right lower-zone opacification. Tuberculosis usually presents with unilateral or bilateral upper-zone cavitation/consolidation.

Thromboembolic disease is possible from the history but the fever and crackles are atypical for this diagnosis. Rheumatoid lung disease tends to give bilateral basal opacification on a chest X-ray, often reticulonodular in character (honeycomb pattern on high-resolution CT scan of chest).

The most likely diagnosis is therefore cryptogenic organising pneumonia (COP). This is a non-infectious pneumonic process occurring in the context of pre-existing inflammatory or autoimmune conditions such as rheumatoid arthritis and it can mimic bacterial pneumonia in its X-ray appearance. Crackles are usually present and inflammatory markers such as the ESR are raised. It responds to corticosteroids rather than antibiotics.

Question 24

A 20-year-old Chinese woman presented with a 2-week history of ankle swelling. She had had asthma since childhood and was taking paracetamol regularly for pains in her wrists and knees. She was also taking a combined oral hormonal contraceptive.

Examination showed bilateral pitting oedema to mid-shin level. Her BP was 148/92 mmHg, and her heart sounds were normal. Chest, abdominal and neurological examinations were normal. Urinalysis showed blood 1+, protein 4+, but was negative for glucose.

Investigations:

haemoglobin	118 g/L (115–165)
MCV	79 fL (80–96)
white cell count	3.3 × 10^9/L (4.0–11.0)
serum sodium	136 mmol/L (137–144)
serum potassium	4.1 mmol/L (3.5–4.9)
serum urea	5.7 mmol/L (2.5–7.0)
serum creatinine	73 μmol/L (60–110)
urinary protein:creatinine ratio	750 mg/mmol (<30)

What is the most important diagnostic investigation?

A: ANCA ○

B: anti-glomerular basement membrane antibodies ○

C: antinuclear antibodies ○

D: antistreptolysin O titre antibodies ○

E: serum complement concentrations ○

Question 24

No Answer Given

Incorrect

A 20-year-old Chinese woman presented with a 2-week history of ankle swelling. She had had asthma since childhood and was taking paracetamol regularly for pains in her wrists and knees. She was also taking a combined oral hormonal contraceptive.

Examination showed bilateral pitting oedema to mid-shin level. Her BP was 148/92 mmHg, and her heart sounds were normal. Chest, abdominal and neurological examinations were normal. Urinalysis showed blood 1+, protein 4+, but was negative for glucose.

Investigations:

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serum sodium	136 mmol/L (137–144)
serum potassium	4.1 mmol/L (3.5–4.9)
serum urea	5.7 mmol/L (2.5–7.0)
serum creatinine	73 µmol/L (60–110)
urinary protein:creatinine ratio	750 mg/mmol (<30)

What is the most important diagnostic investigation?

Answers

A: ANCA
B: anti-glomerular basement membrane antibodies
C: antinuclear antibodies
D: antistreptolysin O titre antibodies
E: serum complement concentrations

Correct answer: C

Explanation

(35%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

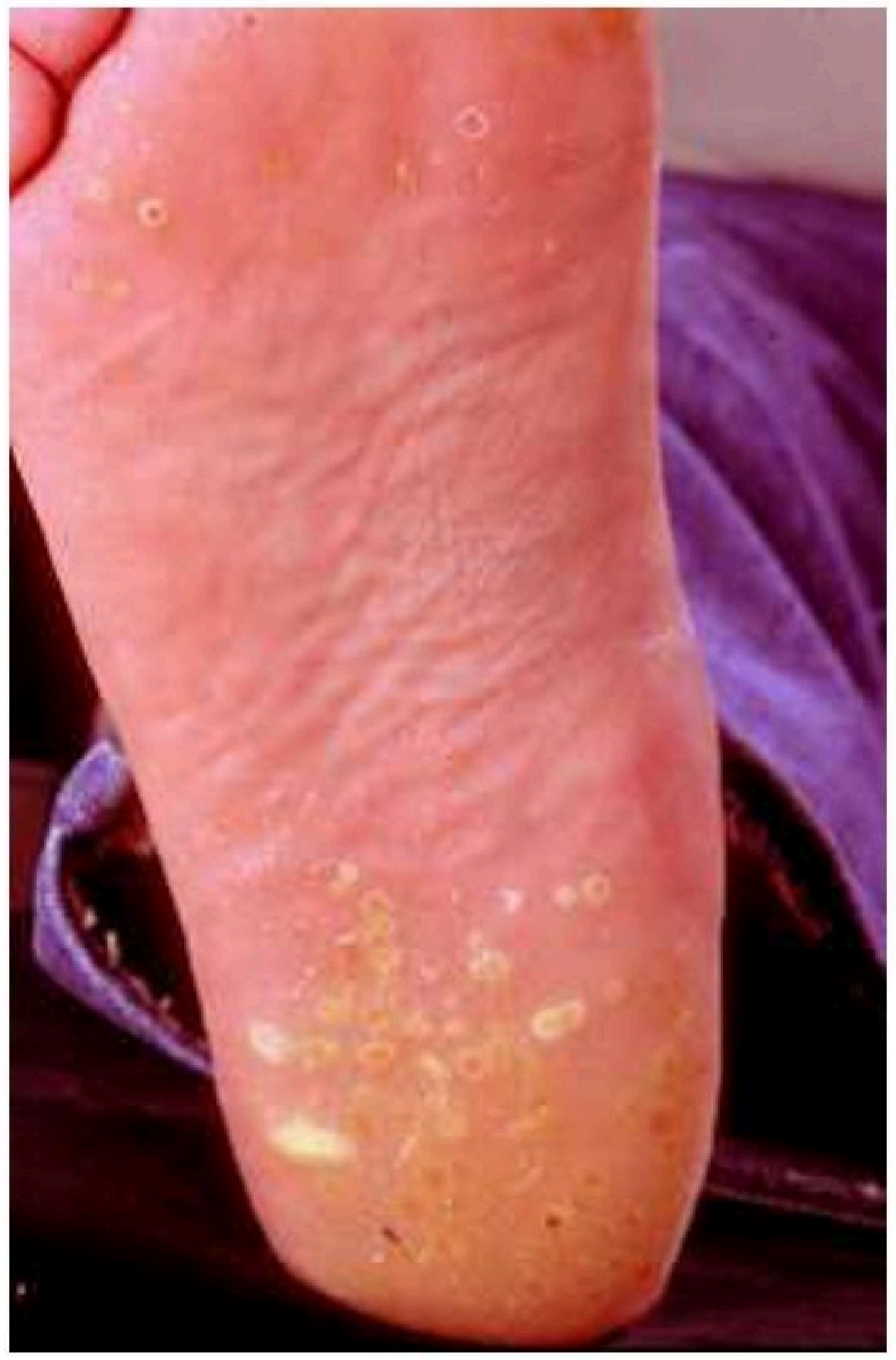
The development of nephrotic syndrome in a young Chinese woman with arthralgia and a low white cell count makes systemic lupus erythematosus (SLE) the most likely diagnosis. A positive test for antinuclear antibodies is very likely and is one of the diagnostic criteria for SLE.

Serum complement levels are likely to be low but are also low in other glomerular diseases, so are less important than antinuclear antibodies as a diagnostic investigation. The other tests are for conditions that rarely cause the nephrotic syndrome (anti-glomerular basement membrane antibody disease, ANCA-associated vasculitis, post-streptococcal glomerulonephritis) and are unlikely to be useful in reaching a diagnosis

Question 25

A 22-year-old man presented with acute pain and swelling of his left knee 4 weeks after a holiday in Spain.

On examination, his temperature was 38.1°C and he had a rash on the soles of his feet. His right foot is shown (see image).



Investigations:

haemoglobin	125 g/L (130–180)
white cell count	16.2×10^9/L (4.0–11.0)
neutrophil count	14.8×10^9/L (1.5–7.0)
platelet count	450×10^9/L (150–400)
serum CRP	210 mg/L (<10)

What is the most likely diagnosis?

A: gonococcal arthritis ○

B: HIV seroconversion illness ○

C: psoriatic arthritis ○

D: reactive arthritis ○

E: syphilis ○

Question 25

Next Question

Question 25

No Answer Given

Incorrect

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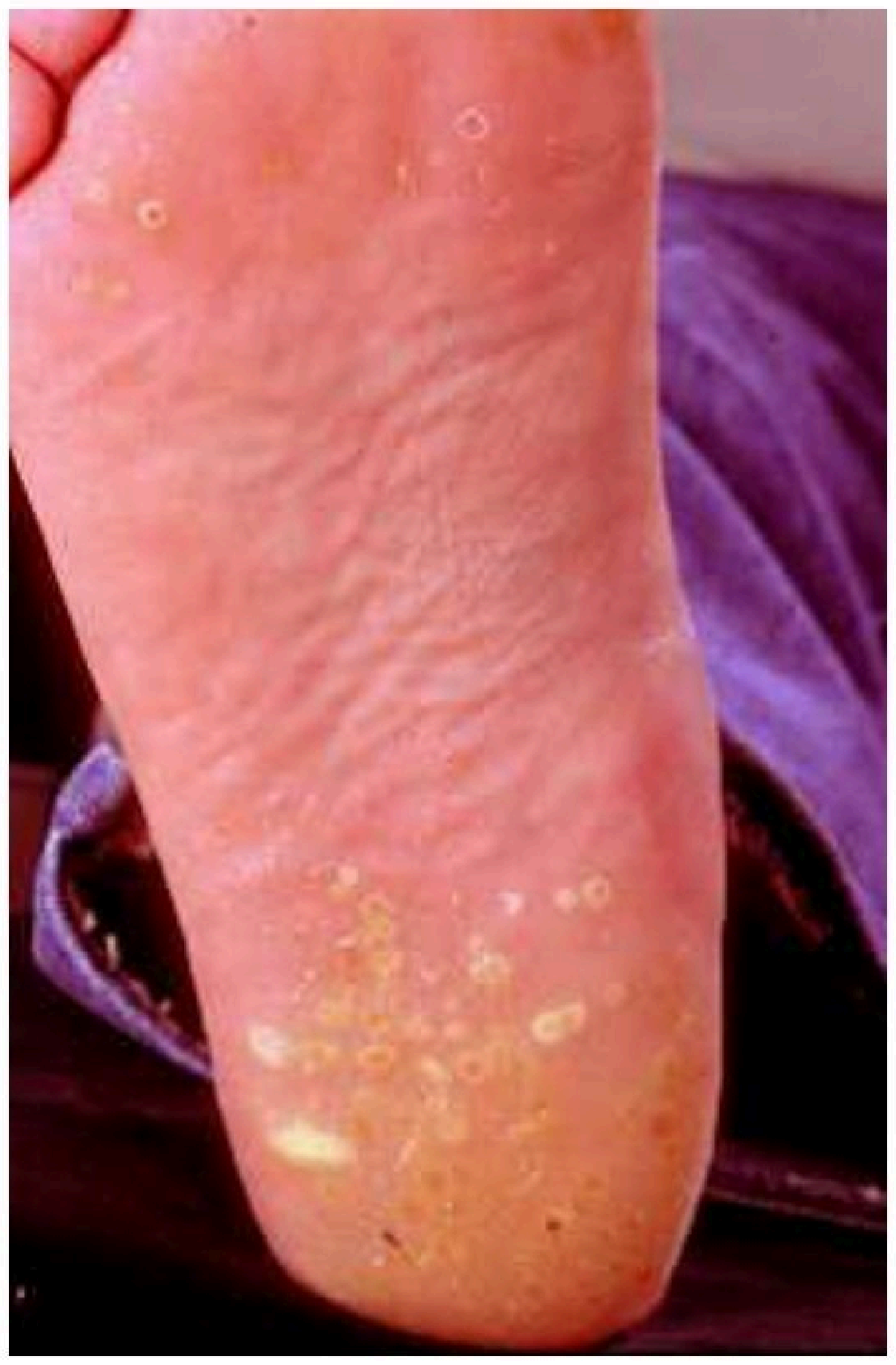

Investigations:

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neutrophil count	14.8 × 10^9/L (1.5–7.0)
platelet count	450 × 10^9/L (150–400)
serum CRP	210 mg/L (<10)

What is the most likely diagnosis?

Answers

A: gonococcal arthritis
B: HIV seroconversion illness
C: psoriatic arthritis
D: reactive arthritis
E: syphilis

Correct answer: D

Explanation

(33%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This is about a picture demonstrating keratoderma blennorrhagica on the sole of his right foot. In addition to this rash, this person also has a history of travel about 4 weeks previously, an increased temperature, a large-joint monoarthritis and an acute phase reaction. Reactive arthritis is the most likely diagnosis here because of the pattern. The rash and the monoarthritis could be indicative of psoriatic arthritis. However, psoriatic arthritis is not usually associated with a temperature or such a CRP response. We are not given any information about balanitis or urethritis, but gonococcal arthritis is unlikely as it is usually a migratory polyarthritis. Syphilis is not usually associated with arthritis, and involvement of the palms and soles is a feature of secondary syphilis. While gonococcal and psoriatic arthritis are both plausible distractors, reactive arthritis is the most likely diagnosis here.

Question 26
Next Question

Question 26

A 23-year-old man presented to the emergency department with acute severe asthma. His regular medication was inhaled salbutamol and beclometasone, and oral theophylline.

On examination, he was dyspnoeic and in distress. His pulse was 104 beats per minute, his BP was 108/64 mmHg and his respiratory rate was 40 breaths per minute. Auscultation of his lungs showed expiratory wheezes throughout. He was unable to perform a peak expiratory flow reading, and he failed to respond to initial therapy with oxygen, nebulised salbutamol and ipratropium bromide, and oral prednisolone 40 mg.

What is the most appropriate next step in treatment?

A: intravenous aminophylline ○

B: intravenous hydrocortisone ○

C: intravenous magnesium sulfate ○

D: non-invasive ventilation ○

E: subcutaneous terbutaline ○

Question 26

No Answer Given

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A 23-year-old man presented to the emergency department with acute severe asthma. His regular medication was inhaled salbutamol and beclometasone, and oral theophylline.

On examination, he was dyspnoeic and in distress. His pulse was 104 beats per minute, his BP was 108/64 mmHg and his respiratory rate was 40 breaths per minute. Auscultation of his lungs showed expiratory wheezes throughout. He was unable to perform a peak expiratory flow reading, and he failed to respond to initial therapy with oxygen, nebulised salbutamol and ipratropium bromide, and oral prednisolone 40 mg.

What is the most appropriate next step in treatment?

Answers

A: intravenous aminophylline
B: intravenous hydrocortisone
C: intravenous magnesium sulfate
D: non-invasive ventilation
E: subcutaneous terbutaline

Correct answer: C

Explanation

(83%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This relates to the most appropriate next step in the management of acute severe asthma failing to respond to initial treatment. The author of this question had in mind the BTS guidance, now updated: http://www.brit-thoracic.org.uk/guidelines/asthma-guidelines.aspx.

There is no role for subcutaneous terbutaline. Intravenous hydrocortisone does not confer any additional benefit over oral prednisolone. Intravenous magnesium sulfate is preferred over aminophylline; the latter can still be given to patients already taking oral theophylline, but magnesium sulfate is more likely to provide additional bronchodilation. There is a void in the clinical research investigating the role of non-invasive ventilation in acute asthma (e.g. compared to COPD where it is more widely used); thus, it has yet to replace invasive ventilation. Nevertheless, ventilator support would still be less preferable to further drug treatment.

Question 27

A 60-year-old man with diet-controlled type 2 diabetes mellitus presented with a 3-month history of unsteadiness. Two years previously, he had undergone surgery for carcinoma of the stomach.

On examination, he had mild weakness of hip flexion. His ankle reflexes were absent, and all of his other limb reflexes were diminished. His plantar responses were extensor. He had normal sensation to pinprick and light touch below his knees, and vibration sense was impaired at his ankles, but joint position sense was impaired. The Romberg test was positive.

What is the most likely diagnosis?

A: diabetic amyotrophy ○

B: paraneoplastic sensory ataxic neuropathy ○

C: spinal arteriovenous malformation ○

D: subacute combined degeneration of the cord ○

E: syringomyelia ○

Question 27 ⌄

Next Question

Question 27

No Answer Given

Incorrect

A 60-year-old man with diet-controlled type 2 diabetes mellitus presented with a 3-month history of unsteadiness. Two years previously, he had undergone surgery for carcinoma of the stomach.

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What is the most likely diagnosis?

Answers

A: diabetic amyotrophy
B: paraneoplastic sensory ataxic neuropathy
C: spinal arteriovenous malformation
D: subacute combined degeneration of the cord
E: syringomyelia

Correct answer: D

Explanation

(69%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has a mixture of myelopathic signs (weak hip flexion, extensor plantar responses) and peripheral sensory phenomena; in view of the central signs, the answer must involve spinal cord pathology. This excludes diabetic amyotrophy and paraneoplastic sensory ataxic neuropathy. The sensory presentation of syringomyelia is quite different (central cord syndrome) and a spinal arteriovenous malformation (AVM) will usually have prominent radicular features at the level of the main AVM feeder. Bearing in mind the stomach surgery in the past, vitamin B_{12} deficiency could combine the central nervous system and peripheral nervous system signs and would match with this clinical history.

Question 28
Next Question

Question 28

A 72-year-old man attended his general practitioner with cough and breathlessness. He had coughed up one teaspoonful of mucoid phlegm daily for the past 12 years. He gave a 1-year history of breathlessness when walking his dog. He had hypertension and had been taking atenolol 50 mg once daily for 5 years. He had a 46 pack-year history of smoking and was a current smoker.

On examination, his BMI was 32.0 kg/m^2 (18.0–25.0).

Investigations:

ECG	left ventricular hypertrophy
baseline spirometry:	
FEV_1	90% predicted
FVC	91% predicted
20 minutes after exercise:	
FEV_1	63% predicted
FVC	84% predicted

What is the most likely cause of his breathlessness?

- A: asthma ○
- B: bronchiectasis ○
- C: COPD ○
- D: hypertensive left ventricular failure ○
- E: obesity ○

Question 28

No Answer Given

Incorrect

A 72-year-old man attended his general practitioner with cough and breathlessness. He had coughed up one teaspoonful of mucoid phlegm daily for the past 12 years. He gave a 1-year history of breathlessness when walking his dog. He had hypertension and had been taking atenolol 50 mg once daily for 5 years. He had a 46 pack-year history of smoking and was a current smoker.

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ECG	left ventricular hypertrophy
baseline spirometry:	
FEV$_1$	90% predicted
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20 minutes after exercise:	
FEV$_1$	63% predicted
FVC	84% predicted

What is the most likely cause of his breathlessness?

Answers

A: asthma
B: bronchiectasis
C: COPD
D: hypertensive left ventricular failure
E: obesity

Correct answer: A

Explanation

(25%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This degree of change in FEV$_1$ and FVC post exercise is in keeping with exercise-induced asthma. COPD and bronchiectasis both give fixed airflow obstruction. Hypertensive left ventricular failure does not fit with the clinical history and a BMI of 32.0 kg/m^2 would not explain the spirometry results.

Question 29

A 42-year-old man presented with a 4-cm thyroid swelling. He had undergone an adrenalectomy for a benign phaeochromocytoma 6 years previously.

Examination confirmed the thyroid swelling but showed no lymph node enlargement or skin lesions.

Investigations:

serum creatinine	86 µmol/L (60–110)
serum corrected calcium	2.25 mmol/L (2.20–2.60)
serum thyroid-stimulating hormone	6.5 mU/L (0.4–5.0)

What is the most appropriate next test to confirm the diagnosis?

A: anti-thyroid peroxidase antibodies ○

B: plasma calcitonin ○

C: plasma parathyroid hormone ○

D: serum 25-OH-cholecalciferol ○

E: thyroid receptor antibodies ○

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What is the most appropriate next test to confirm the diagnosis?

Answers

A: anti-thyroid peroxidase antibodies
B: plasma calcitonin
C: plasma parathyroid hormone
D: serum 25-OH-cholecalciferol
E: thyroid receptor antibodies

Correct answer: B

Explanation

(61%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Phaeochromocytomas are rare tumours and are even more rarely associated with genetic conditions such as von Hippel–Lindau disease and multiple endocrine neoplasia type 2 (MEN2). The presence of a thyroid mass raises the possibility of a calcitonin-producing medullary cell tumour (MCT). Thus, the correct answer is to measure plasma calcitonin. An MCT is usually the presenting condition in MEN2 but patients can be asymptomatic for some time. Hyperparathyroidism can also be a feature but would cause hypercalcaemia. Marginally elevated thyroid-stimulating hormone levels are common and are incidental in this case.

Question 30

A 66-year-old man, who was recovering in the burns unit from a full-thickness burn to his left leg, complained of right upper abdominal pain.

On examination, he had a temperature of 37.8°C and he had tenderness over the right hypochondrium.

Investigations:

haemoglobin	101 g/L (130–180)
white cell count	14.9 × 10^9/L (4.0–11.0)
ESR	50 mm/1st h (<20)
serum total bilirubin	20 µmol/L (1–22)
serum alanine aminotransferase	51 U/L (5–35)
serum alkaline phosphatase	100 U/L (45–105)
serum amylase	500 U/L (60–180)
ultrasound scan of abdomen	thickened gallbladder; pericholecystic fluid collection; no evidence of gallstones

What is the most likely diagnosis?

A: acalculous cholecystitis ○

B: acute pancreatitis ○

C: common bile duct stone ○

D: mesenteric ischaemia ○

E: perforated peptic ulcer ○

Question 30

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ultrasound scan of abdomen	thickened gallbladder; pericholecystic fluid collection; no evidence of gallstones

What is the most likely diagnosis?

Answers

A: acalculous cholecystitis
B: acute pancreatitis
C: common bile duct stone
D: mesenteric ischaemia
E: perforated peptic ulcer

Correct answer: A

Explanation

(63%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Acalculous cholecystitis (inflammation of the gallbladder in the absence of gallstones) typically occurs in the very ill patient on the intensive care unit, or after extensive burns. The thickened gallbladder wall and pericholecystic fluid indicate inflammation in the gallbladder wall. The serum amylase is raised, but this is a non-specific finding.

Question 31

A 29-year-old man with Hodgkin lymphoma was admitted as an emergency with epistaxis and a petechial rash. He had recently been treated with combination chemotherapy.

On admission, he was pale and breathless. He had a fine petechial rash on his legs, bruises on his trunk and two large blood blisters in his mouth.

Investigations:

haemoglobin	104 g/L (130–180)
white cell count	0.9 × 10^9/L (4.0–11.0)
neutrophil count	0.5 × 10^9/L (1.5–7.0)
platelet count	5 × 10^9/L (150–400)

One adult dose of platelets was requested.

Which special platelet product is required?

- A: apheresis ○
- B: CMV-seronegative ○
- C: gamma-irradiated ○
- D: HLA-matched ○
- E: washed ○

Question 31

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platelet count	5 × 10^9/L (150–400)

One adult dose of platelets was requested.

Which special platelet product is required?

Answers

A: apheresis
B: CMV-seronegative
C: gamma-irradiated
D: HLA-matched
E: washed

Correct answer: C

Explanation

(53%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This individual has evidence of mucosal bleeding and severe thrombocytopenia. A platelet count of <10 × 10^9/L is associated with a risk of serious spontaneous haemorrhage. It is therefore appropriate that this individual is given one adult dose of platelets. Cellular blood components contain lymphocytes and there is therefore a risk of transfusion-associated graft-versus-host disease (GVHD) in immunocompromised individuals (particularly those with severe T-lymphocyte immunodeficiency syndromes). The risk of transfusion-associated GVHD in Hodgkin lymphoma is unrelated to the treatment modality and/or disease stage. Individuals with Hodgkin lymphoma should therefore receive X- or gamma-irradiated blood for life.

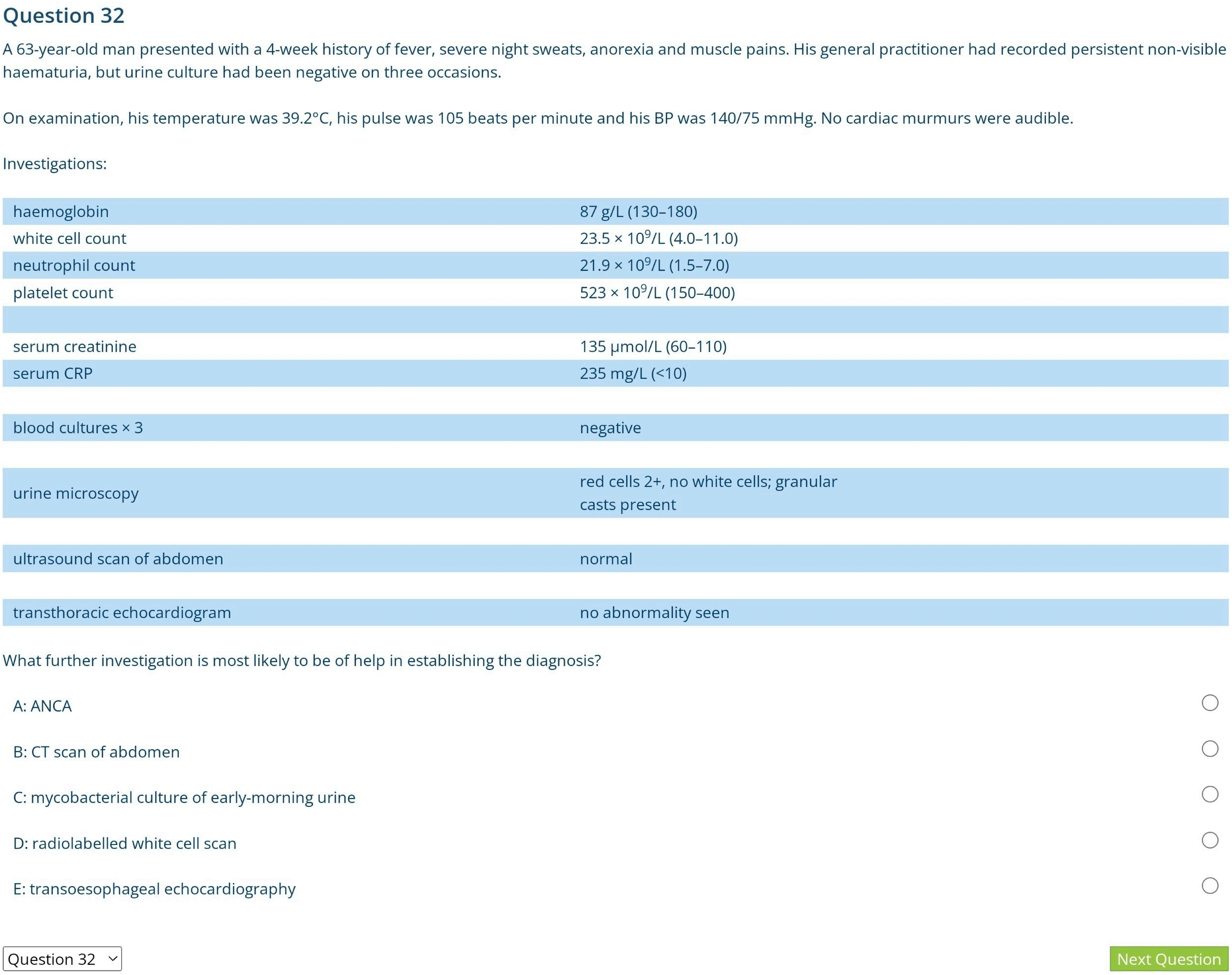
Apheresis (single donor) platelets are specifically indicated for patients with neonatal alloimmune thrombocytopenia, for intrauterine and neonatal transfusions and for children and young adults born after 01/01/1996.

The use of CMV-seronegative platelets is reserved for intrauterine and neonatal transfusions and for elective transfusion of pregnant women. It is also used for patients who have received an allogeneic haematopoietic stem cell transplant.

HLA-matched platelets are used for individuals that are refractory to platelet transfusions and have developed anti-HLA antibodies.

Washed platelets (re-suspended in 100% platelet additive solution) are used for patients with a history of recurrent and severe allergic transfusion reactions.

Ref: British Journal of Haematology 2017: 176; 365–394. Guidelines for the use of platelet transfusions.



Question 32

A 63-year-old man presented with a 4-week history of fever, severe night sweats, anorexia and muscle pains. His general practitioner had recorded persistent non-visible haematuria, but urine culture had been negative on three occasions.

On examination, his temperature was 39.2°C, his pulse was 105 beats per minute and his BP was 140/75 mmHg. No cardiac murmurs were audible.

Investigations:

haemoglobin	87 g/L (130–180)
white cell count	23.5×10^9/L (4.0–11.0)
neutrophil count	21.9×10^9/L (1.5–7.0)
platelet count	523×10^9/L (150–400)
serum creatinine	135 µmol/L (60–110)
serum CRP	235 mg/L (<10)
blood cultures × 3	negative
urine microscopy	red cells 2+, no white cells; granular casts present
ultrasound scan of abdomen	normal
transthoracic echocardiogram	no abnormality seen

What further investigation is most likely to be of help in establishing the diagnosis?

A: ANCA ○

B: CT scan of abdomen ○

C: mycobacterial culture of early-morning urine ○

D: radiolabelled white cell scan ○

E: transoesophageal echocardiography ○

Question 32

No Answer Given

Incorrect

A 63-year-old man presented with a 4-week history of fever, severe night sweats, anorexia and muscle pains. His general practitioner had recorded persistent non-visible haematuria, but urine culture had been negative on three occasions.

On examination, his temperature was 39.2°C, his pulse was 105 beats per minute and his BP was 140/75 mmHg. No cardiac murmurs were audible.

Investigations:

haemoglobin	87 g/L (130–180)
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blood cultures × 3	negative
urine microscopy	red cells 2+, no white cells; granular casts present
ultrasound scan of abdomen	normal
transthoracic echocardiogram	no abnormality seen

What further investigation is most likely to be of help in establishing the diagnosis?

Answers

A: ANCA
B: CT scan of abdomen
C: mycobacterial culture of early-morning urine
D: radiolabelled white cell scan
E: transoesophageal echocardiography

Correct answer: A

Explanation

(22%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has microscopic polyangiitis which is one of the ANCA-associated vasculitides. The presence of haematuria, fever and raised inflammatory markers are frequent findings in this condition. It is most common in the elderly. The CT scan could be useful to detect an occult intra-abdominal abscess. However an abdominal abscess associated with high fevers would probably produce some local signs and positive blood cultures and would not be expected to cause non-visible haematuria. Renal tuberculosis would usually cause pyuria. A radiolabelled white cell scan is rarely diagnostically useful unless there are good reasons to suspect a localised occult infection. Endocarditis is very unlikely given the normal transthoracic echocardiogram and negative blood cultures.

Question 33

A 55-year-old woman presented with a 4-week history of intermittent severe swelling affecting her face and tongue. Each episode lasted 1–2 days and slowly resolved spontaneously. Oral antihistamines were unhelpful. She had a history of angina and hypertension. She was taking aspirin, amlodipine, bisoprolol, enalapril and atorvastatin.

Which medication is the most likely cause of her symptoms?

- A: amlodipine ○
- B: aspirin ○
- C: atorvastatin ○
- D: bisoprolol ○
- E: enalapril ○

Question 33

No Answer Given

Incorrect

A 55-year-old woman presented with a 4-week history of intermittent severe swelling affecting her face and tongue. Each episode lasted 1–2 days and slowly resolved spontaneously. Oral antihistamines were unhelpful. She had a history of angina and hypertension. She was taking aspirin, amlodipine, bisoprolol, enalapril and atorvastatin.

Which medication is the most likely cause of her symptoms?

Answers

A: amlodipine
B: aspirin
C: atorvastatin
D: bisoprolol
E: enalapril

Correct answer: E

Explanation

(89%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Intermittent swelling of face and tongue suggests a diagnosis of angioedema without urticaria. Angioedema can be inherited or acquired, allergic or drug-induced. Hereditary angioedema usually occurs for the first time in childhood or adolescence. Drug-induced angioedema without urticaria is most frequently associated with ACE inhibitors and, less frequently, angiotensin II receptor blockers. This represents a pharmacological effect on bradykinin metabolism rather than allergy.

Question 34

A previously fit 35-year-old woman presented with headaches.

On examination, her BP was elevated at 180/94 mmHg. Her heart sounds were normal to auscultation. She had no peripheral oedema. Abdominal examination was normal.

Investigations:

serum sodium	144 mmol/L (137–144)
serum potassium	2.8 mmol/L (3.5–4.9)
serum chloride	87 mmol/L (95–107)
serum bicarbonate	34 mmol/L (20–28)
serum urea	5.6 mmol/L (2.5–7.0)
serum creatinine	99 µmol/L (60–110)
plasma renin activity (after 30 min supine)	6.3 pmol/mL/h (1.1–2.7)
plasma aldosterone (after 30 min supine)	1005 pmol/L (135–400)
plasma adrenocorticotropic hormone	5.0 pmol/L (3.3–15.4)
24-h urinary free cortisol	105 nmol (55–250)

What is the most likely diagnosis?

A: Bartter syndrome ○

B: Conn’s syndrome ○

C: fibromuscular dysplasia of the renal artery ○

D: laxative misuse ○

E: liquorice excess ○

Question 34 ⌄

Next Question

Question 34

No Answer Given

Incorrect

A previously fit 35-year-old woman presented with headaches.

On examination, her BP was elevated at 180/94 mmHg. Her heart sounds were normal to auscultation. She had no peripheral oedema. Abdominal examination was normal.

Investigations:

serum sodium	144 mmol/L (137–144)
serum potassium	2.8 mmol/L (3.5–4.9)
serum chloride	87 mmol/L (95–107)
serum bicarbonate	34 mmol/L (20–28)
serum urea	5.6 mmol/L (2.5–7.0)
serum creatinine	99 µmol/L (60–110)
plasma renin activity (after 30 min supine)	6.3 pmol/mL/h (1.1–2.7)
plasma aldosterone (after 30 min supine)	1005 pmol/L (135–400)
plasma adrenocorticotropic hormone	5.0 pmol/L (3.3–15.4)
24-h urinary free cortisol	105 nmol (55–250)

What is the most likely diagnosis?

Answers

A: Bartter syndrome
B: Conn’s syndrome
C: fibromuscular dysplasia of the renal artery
D: laxative misuse
E: liquorice excess

Correct answer: C

Explanation

(43%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

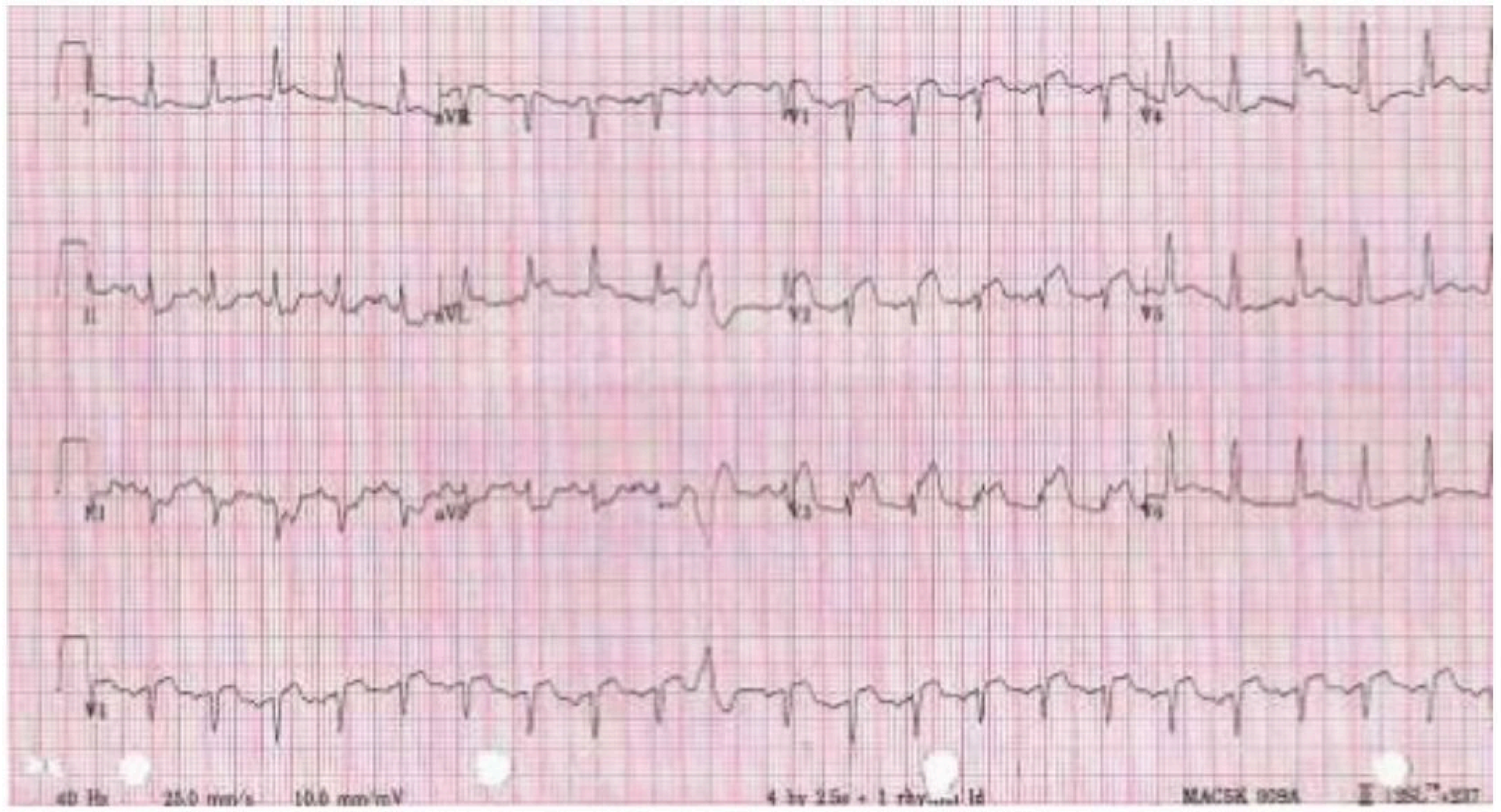
This woman has a hypokalaemic, hypochloraemic metabolic alkalosis with hypertension consistent with hyperaldosteronism. Fibromuscular dysplasia of the renal artery leads to renal artery stenosis. This causes renal hypoperfusion stimulating increased renin levels and consequently elevated aldosterone levels. It is most prevalent in women between 30 and 50 years of age. Bartter syndrome does not cause hypertension (it causes renal tubular salt and water wasting), Conn’s syndrome is primary hyperaldosteronism which causes the plasma renin level to be suppressed. BP is often low in laxative misuse. Excess liquorice ingestion causes apparent mineralocorticoid excess through inhibition of 17-hydroxysteroid dehydrogenase type 2 in the kidney allowing cortisol to exert mineralocorticoid effects through the aldosterone receptor. Thus, aldosterone levels would be suppressed in this situation.

Question 35

A 26-year-old woman was brought by ambulance to the emergency department. She developed ventricular fibrillation immediately on arrival. DC cardioversion restored sinus rhythm. Her husband said she had complained of chest pain for about 60 minutes before he had phoned for an ambulance. She was 28 weeks pregnant and was a smoker.

Investigations:

12-lead ECG	see image



She was treated with aspirin and clopidogrel.

What is the most appropriate next step in management?

A: coronary angiography ○

B: diltiazem ○

C: low-molecular-weight heparin ○

D: tenecteplase ○

E: transthoracic echocardiography ○

Question 35 ⌄

Next Question

Question 35

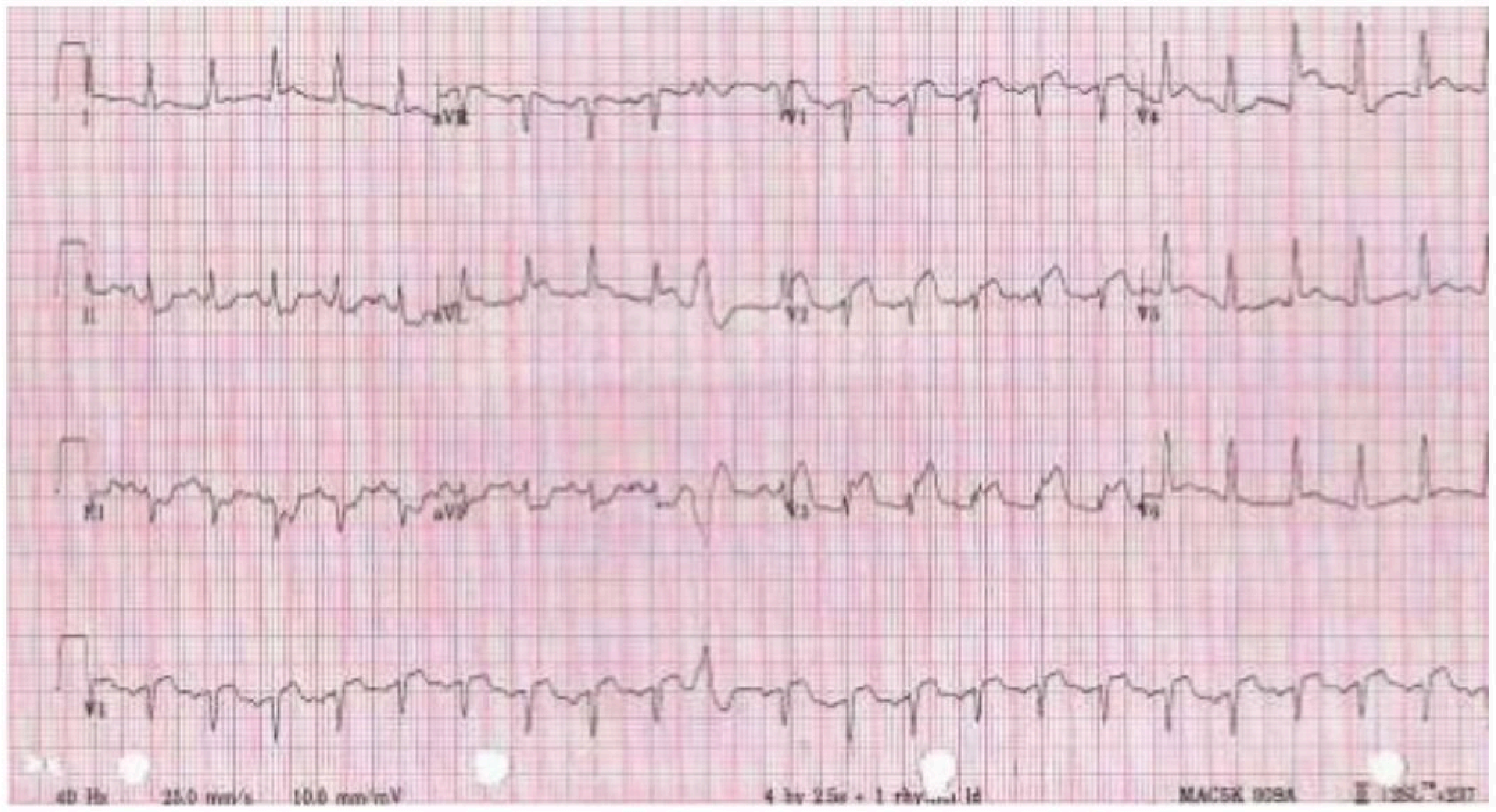
No Answer Given

Incorrect

A 26-year-old woman was brought by ambulance to the emergency department. She developed ventricular fibrillation immediately on arrival. DC cardioversion restored sinus rhythm. Her husband said she had complained of chest pain for about 60 minutes before he had phoned for an ambulance. She was 28 weeks pregnant and was a smoker.

Investigations:

12-lead ECG	see image



She was treated with aspirin and clopidogrel.

What is the most appropriate next step in management?

Answers

- A: coronary angiography
- B: diltiazem
- C: low-molecular-weight heparin
- D: tenecteplase
- E: transthoracic echocardiography

Correct answer: A

Explanation

(62%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient, who is 28 weeks pregnant, presents with chest pain, cardiac arrest and ECG showing anterior ST elevation and inferior ST depression. The ECG suggests anterior ST-elevation myocardial infarction. At this age, and in the absence of risk factors for ischaemic heart disease, this would be most likely to be secondary to spontaneous coronary artery dissection, although coronary spasm, aortic dissection involving the left coronary artery, and even atheromatous plaque rupture are possible. The incidence of myocardial infarction in pregnancy is about 5 per 100 000 births.

The correct answer is coronary angiography. Immediate coronary angiography will identify the cause of coronary obstruction and usually allow treatment by percutaneous coronary intervention if the vessel (left anterior descending coronary artery in this case) is occluded. The procedure would require shielding of the patient’s abdomen, monitoring of the fetus, and careful use of radiation and contrast media.

Question 36

A 19-year-old man first noticed right-sided shoulder weakness when his scapula “stuck out” painlessly during weightlifting. One year previously, he had experienced severe pain in his right shoulder, which had resolved in 3 weeks. He stated that his first cousin was wheelchair-bound because of a muscle disease.

On examination, his weakness was limited to the right serratus anterior muscle. His tendon reflexes were intact, and sensation was normal.

What is the most likely diagnosis?

A: brachial neuritis ○

B: cervical radiculopathy ○

C: facioscapulohumeral muscular dystrophy ○

D: spinal muscular atrophy ○

E: spinobulbar muscular atrophy ○

Question 36

Next Question

Question 36

No Answer Given

Incorrect

A 19-year-old man first noticed right-sided shoulder weakness when his scapula “stuck out” painlessly during weightlifting. One year previously, he had experienced severe pain in his right shoulder, which had resolved in 3 weeks. He stated that his first cousin was wheelchair-bound because of a muscle disease.

On examination, his weakness was limited to the right serratus anterior muscle. His tendon reflexes were intact, and sensation was normal.

What is the most likely diagnosis?

Answers

A: brachial neuritis
B: cervical radiculopathy
C: facioscapulohumeral muscular dystrophy
D: spinal muscular atrophy
E: spinobulbar muscular atrophy

Correct answer: A

Explanation

(31%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Serratus anterior receives input from three cervical nerve roots and a single radiculopathy could not account for isolated serratus weakness. Each of the three muscular dystrophies are relatively symmetrical and have features notable by their absence in this case (facioscapulohumeral – facial and biceps weakness; spinal muscular atrophy – distal wasting and weakness, e.g. in the hands; spinobulbar muscular atrophy – bulbar weakness). The answer is therefore brachial neuritis.

Question 37

A 63-year-old man attended a routine 6-monthly renal clinic appointment and reported the occurrence of two episodes of painless visible haematuria during the previous 2 months. He had a history of membranous nephropathy which presented with nephrotic syndrome 9 years previously. He entered remission following a course of alternate months of cyclophosphamide and prednisolone over 6 months. His renal function had remained stable and the serum creatinine concentration had subsequently remained stable at around 160 μmol/L (60–110). He was not taking any medication. He smoked 25 cigarettes per day.

On examination, his BP was 158/68 mmHg and he had no oedema. There was no abnormality on examination of the heart, lungs or abdomen. He had a right femoral bruit. Urinalysis showed blood 3+, protein 1+.

Investigations:

full blood count	normal
serum creatinine	168 μmol/L (60–110)
eGFR (MDRD)	40 mL/min/1.73 m^2 (>60)
urinary protein:creatinine ratio	30 mg/mmol (<30)
urine culture	negative
ultrasound scan of kidneys	right kidney 9.4 cm, left kidney 10.2 cm; no obstruction

What is the most important next investigation?

A: CT scan of renal tract ○

B: cystoscopy ○

C: MR angiography of renal arteries ○

D: MR venography of renal veins ○

E: renal biopsy ○

Question 37 ⌄

Next Question

Question 37

No Answer Given

Incorrect

A 63-year-old man attended a routine 6-monthly renal clinic appointment and reported the occurrence of two episodes of painless visible haematuria during the previous 2 months. He had a history of membranous nephropathy which presented with nephrotic syndrome 9 years previously. He entered remission following a course of alternate months of cyclophosphamide and prednisolone over 6 months. His renal function had remained stable and the serum creatinine concentration had subsequently remained stable at around 160 μmol/L (60–110). He was not taking any medication. He smoked 25 cigarettes per day.

On examination, his BP was 158/68 mmHg and he had no oedema. There was no abnormality on examination of the heart, lungs or abdomen. He had a right femoral bruit. Urinalysis showed blood 3+, protein 1+.

Investigations:

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serum creatinine	168 μmol/L (60–110)
eGFR (MDRD)	40 mL/min/1.73 m^2 (>60)
urinary protein:creatinine ratio	30 mg/mmol (<30)
urine culture	negative
ultrasound scan of kidneys	right kidney 9.4 cm, left kidney 10.2 cm; no obstruction

What is the most important next investigation?

Answers

A: CT scan of renal tract
B: cystoscopy
C: MR angiography of renal arteries
D: MR venography of renal veins
E: renal biopsy

Correct answer: B

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has visible haematuria without significant proteinuria or urine infection so cystoscopy to check for bladder tumour is the most important investigation, regardless of the past medical history. In addition, previous treatment with cyclophosphamide is a major risk factor for bladder cancer. Male sex, increasing age and cigarette smoking also increase the risk.

Other investigations would only be considered once the result of cystoscopy was known. MR angiography of renal arteries is an investigation for conditions such as renal artery stenosis, renal arterial occlusion and polyarteritis nodosa, of which there is little evidence in this patient. MR venography of renal veins may be used to look for renal vein thrombosis as a cause of visible haematuria in patients with nephrotic syndrome; this man is in remission from nephrotic syndrome so the risk of renal vein thrombosis is very low. Renal biopsy is likely only to show chronic damage from previous membranous nephropathy.

Question 38

A 50-year-old nurse presented with a purpuric rash over her legs, preceded 2 weeks previously by tonsillitis. A diagnosis of postviral thrombocytopenia was made, and her symptoms resolved over a 4-week period. Four months later, she presented with numbness and weakness of her hands and feet and a recurrence of the purpuric rash.

Investigations:

haemoglobin	125 g/L (115–165)
white cell count	8.4 × 10^9/L (4.0–11.0)
platelet count	120 × 10^9/L (150–400)
ESR	80 mm/1st h (<30)
serum urea	7.0 mmol/L (2.5–7.0)
serum creatinine	105 µmol/L (60–110)
serum alanine aminotransferase	17 U/L (5–35)
serum aspartate aminotransferase	26 U/L (1–31)
serum CRP	145 mg/L (<10)
serum complement C3	180 mg/dL (65–190)
serum complement C4	45 mg/dL (15–50)
antinuclear antibodies	negative
anti-double-stranded DNA antibodies (ELISA)	negative
ANCA:	
anti-PR3 antibodies	1 U/mL (<10)
anti-MPO antibodies	65 U/mL (<10)
chest X-ray	normal lung fields
urine microscopy	no white cells or casts

What is the most likely diagnosis?

A: cryoglobulinaemia ○

B: granulomatosis with polyangiitis ○

C: microscopic polyangiitis ○

D: polyarteritis nodosa ○

E: systemic lupus erythematosus ○

Question 38

Next Question

Question 38

No Answer Given

Incorrect

A 50-year-old nurse presented with a purpuric rash over her legs, preceded 2 weeks previously by tonsillitis. A diagnosis of postviral thrombocytopenia was made, and her symptoms resolved over a 4-week period. Four months later, she presented with numbness and weakness of her hands and feet and a recurrence of the purpuric rash.

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anti-PR3 antibodies	1 U/mL (<10)
anti-MPO antibodies	65 U/mL (<10)
chest X-ray	normal lung fields
urine microscopy	no white cells or casts

What is the most likely diagnosis?

Answers

A: cryoglobulinaemia
B: granulomatosis with polyangiitis
C: microscopic polyangiitis
D: polyarteritis nodosa
E: systemic lupus erythematosus

Correct answer: C

Explanation

(57%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A 50-year-old woman has evidence of purpura and peripheral sensorimotor neuropathy. This combination of her clinical signs should alert us to the possibility of systemic vasculitis. The purpura suggests that this is a small vessel vasculitis. The positive anti-MPO antibody is consistent with this diagnosis. The negative antinuclear antibody and double-stranded DNA antibodies suggest that this is not systemic lupus erythematosus (SLE). The absence of any complement activation goes against cryoglobulinaemia. The presence of purpura rules out polyarteritis nodosa. This leaves us with granulomatosis with polyangiitis and microscopic polyangiitis. The main differentiating feature between these two is the presence of granulomatous disease. As neither the purpura nor the neuropathy is suggestive of granulomatous involvement, we are left with microscopic polyangiitis as the most likely answer.

Question 39

A 72-year-old man developed sudden severe breathlessness and left-sided chest pain while working in his garden. A few minutes later, he collapsed and was taken to the emergency department. Several years previously, he had been found to have a systolic murmur at a routine medical examination and an echocardiogram had shown mitral valve prolapse. He had no other significant medical history.

On examination, he was very breathless and cyanosed, with an oxygen saturation of 88% (94–98) breathing air. His pulse was 130 beats per minute and regular, and his BP was 80/50 mmHg. His neck veins were markedly distended. There was no cardiomegaly. He had crackles up to the mid-zones of his lungs. His respiration was very noisy, and his heart sounds could not be easily heard.

Investigations:

ECG	sinus tachycardia with non-specific T-wave flattening
chest X-ray	cardiothoracic ratio 15:30; pulmonary oedema

What is the most likely diagnosis?

A: acute mitral regurgitation ○

B: acute myocardial infarction ○

C: infective endocarditis ○

D: pulmonary embolism ○

E: rupture of sinus of Valsalva ○

Question 39 ⌄

Next Question

Question 39

No Answer Given

Incorrect

A 72-year-old man developed sudden severe breathlessness and left-sided chest pain while working in his garden. A few minutes later, he collapsed and was taken to the emergency department. Several years previously, he had been found to have a systolic murmur at a routine medical examination and an echocardiogram had shown mitral valve prolapse. He had no other significant medical history.

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Investigations:

ECG	sinus tachycardia with non-specific T-wave flattening
chest X-ray	cardiothoracic ratio 15:30; pulmonary oedema

What is the most likely diagnosis?

Answers

A: acute mitral regurgitation
B: acute myocardial infarction
C: infective endocarditis
D: pulmonary embolism
E: rupture of sinus of Valsalva

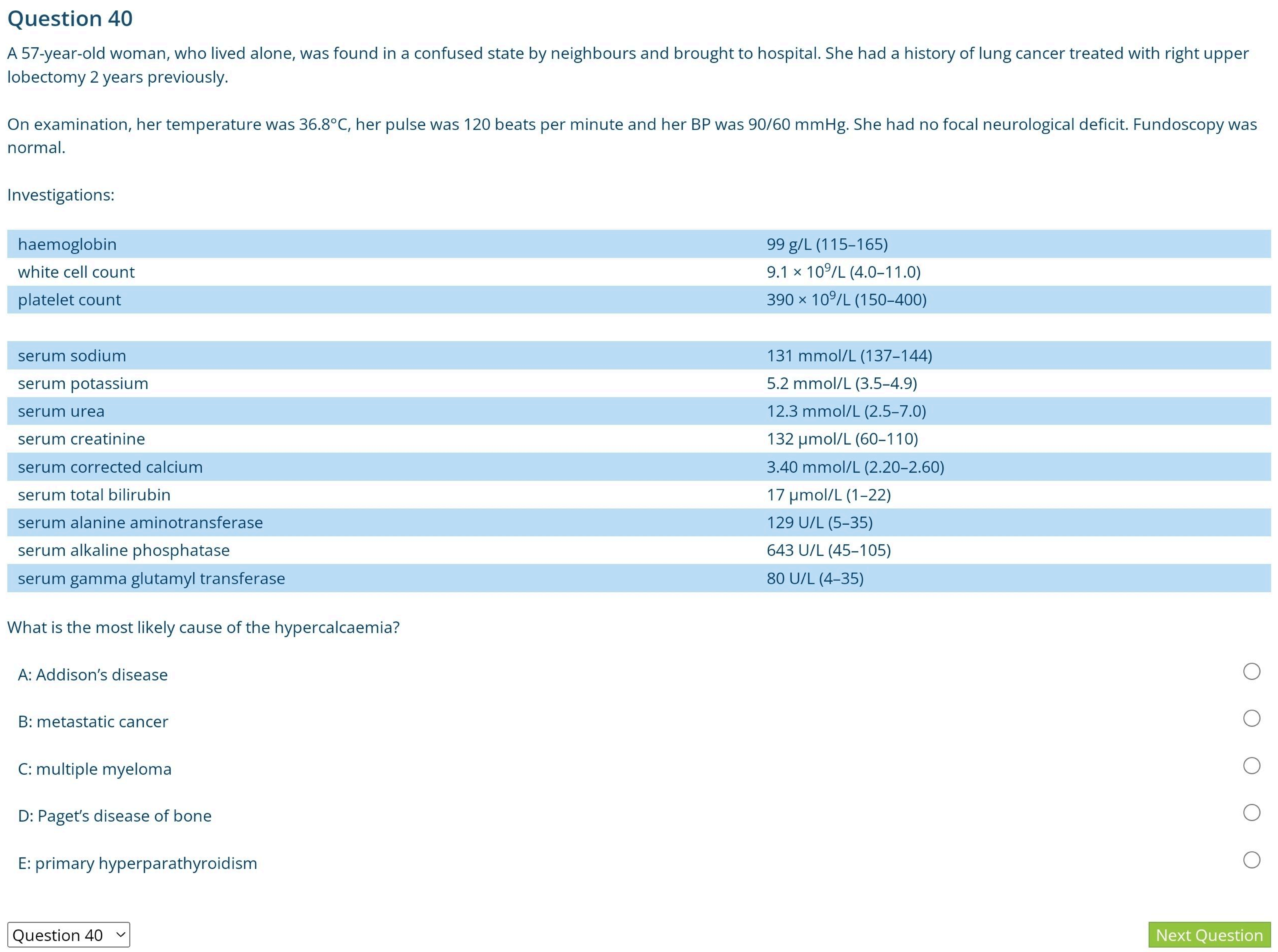
Correct answer: A

Explanation

(40%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has a background of mitral valve prolapse. He presents with sudden-onset severe dyspnoea and left-sided chest pain with clinical signs of acute severe left heart failure. Although a murmur is not heard, the breath sounds are very noisy, and a murmur may not be audible in up to 50% of cases of acute severe mitral regurgitation. The causes of acute severe mitral regurgitation included chordal rupture, flail leaflet, and papillary muscle rupture (usually secondary to myocardial infarction). The ECG did not show evidence of myocardial infarction and no features to support infective endocarditis are given. Sinus of Valsalva rupture usually presents before the age of 30 with chest pain, acute heart failure and a continuous murmur accentuated in diastole.

The correct answer is acute mitral regurgitation. The presence of longstanding mitral valve prolapse, usually with myxomatous degeneration of the valve apparatus in this age group, predisposes to chordal rupture. Acute, short-lived chest pain is often a feature of chordal rupture.



Question 40

A 57-year-old woman, who lived alone, was found in a confused state by neighbours and brought to hospital. She had a history of lung cancer treated with right upper lobectomy 2 years previously.

On examination, her temperature was 36.8°C, her pulse was 120 beats per minute and her BP was 90/60 mmHg. She had no focal neurological deficit. Fundoscopy was normal.

Investigations:

haemoglobin	99 g/L (115–165)
white cell count	9.1 × 10^9/L (4.0–11.0)
platelet count	390 × 10^9/L (150–400)

serum sodium	131 mmol/L (137–144)
serum potassium	5.2 mmol/L (3.5–4.9)
serum urea	12.3 mmol/L (2.5–7.0)
serum creatinine	132 µmol/L (60–110)
serum corrected calcium	3.40 mmol/L (2.20–2.60)
serum total bilirubin	17 µmol/L (1–22)
serum alanine aminotransferase	129 U/L (5–35)
serum alkaline phosphatase	643 U/L (45–105)
serum gamma glutamyl transferase	80 U/L (4–35)

What is the most likely cause of the hypercalcaemia?

A: Addison’s disease ○

B: metastatic cancer ○

C: multiple myeloma ○

D: Paget’s disease of bone ○

E: primary hyperparathyroidism ○

Question 40

No Answer Given

Incorrect

A 57-year-old woman, who lived alone, was found in a confused state by neighbours and brought to hospital. She had a history of lung cancer treated with right upper lobectomy 2 years previously.

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What is the most likely cause of the hypercalcaemia?

Answers

A: Addison’s disease
B: metastatic cancer
C: multiple myeloma
D: Paget’s disease of bone
E: primary hyperparathyroidism

Correct answer: B

Explanation

(35%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This individual has presented with confusion, tachycardia and hypotension. The investigations confirm a normal full blood count, renal impairment, significant hypercalcaemia and abnormal liver biochemistry.

It is most likely that the hypercalcaemia has resulted in the confusion and dehydration, leading to the presenting signs and symptoms.

The abnormal liver biochemistry and raised serum alkaline phosphatase would be unusual in multiple myeloma. Paget’s disease usually causes an isolated rise in the alkaline phosphatase, and hypercalcaemia is unusual. Addison’s disease is characterised by hyponatraemia in 85–90% of individuals and hyperkalaemia in 60–65%, but hypercalcaemia is a rare occurrence.

It is therefore most likely that this individual has metastatic cancer, with liver involvement (resulting in the abnormal liver biochemistry) and skeletal metastases (resulting in the hypercalcaemia). The most likely primary sites are breast and lung.

Question 41

A 17-year-old Afghan boy, who had arrived in the UK 5 days previously, became generally unwell and developed a sore throat.

On examination, his temperature was 38.1°C and his pulse was 86 beats per minute. He had tender, enlarged cervical glands palpable and an adherent grey membrane over his soft palate and tonsils.

What is the most likely diagnosis?

- A: candidiasis ○
- B: diphtheria ○
- C: group A streptococcal tonsillitis ○
- D: infectious mononucleosis ○
- E: Vincent angina ○

Question 41

No Answer Given

Incorrect

A 17-year-old Afghan boy, who had arrived in the UK 5 days previously, became generally unwell and developed a sore throat.

On examination, his temperature was 38.1°C and his pulse was 86 beats per minute. He had tender, enlarged cervical glands palpable and an adherent grey membrane over his soft palate and tonsils.

What is the most likely diagnosis?

Answers

A: candidiasis
B: diphtheria
C: group A streptococcal tonsillitis
D: infectious mononucleosis
E: Vincent angina

Correct answer: B

Explanation

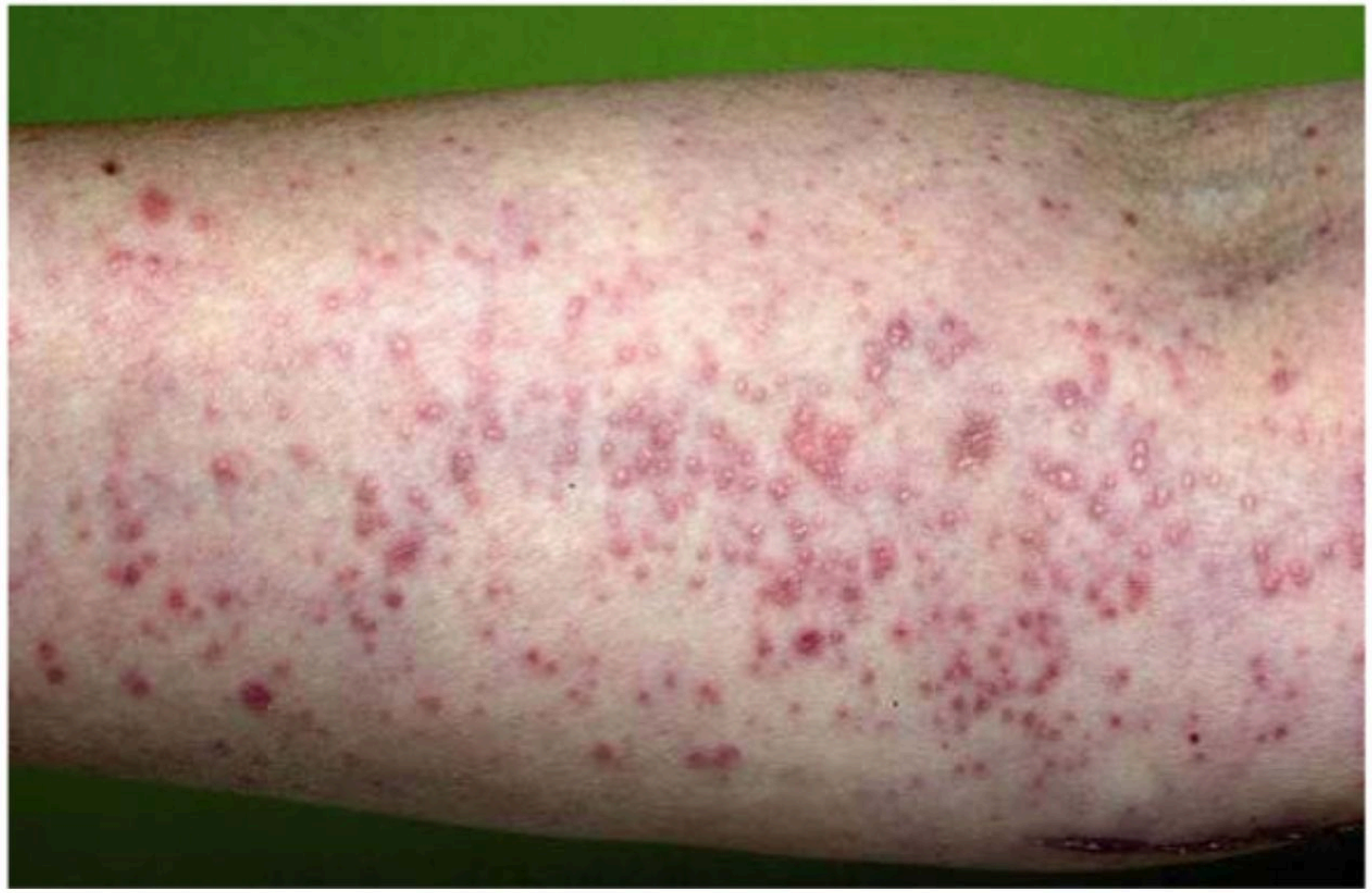
(94%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Diphtheria is a life-threatening infection which presents with severe pharyngitis and a characteristic membrane. It is uncommon in the UK, but clinicians should be alert to the risk of this condition, particularly in patients presenting from countries where it is endemic. Vincent angina can also cause a pharyngeal membrane but there is usually also severe local tissue destruction. Vincent’s angina is usually caused by a mixture of anaerobes and spirochaetes. The other infections listed cause pharyngeal infections but do not produce the characteristic diphtheritic membrane.

Question 42

A 51-year-old woman presented with a 4-month history of an itchy rash, which had begun on her feet and progressed to affect her forearms and lower back. She was otherwise well and was taking no systemic medication.

On examination, she had a symmetrical papular rash (see image).



What is the most likely diagnosis?

- A: atopic eczema ○
- B: dermatitis herpetiformis ○
- C: guttate psoriasis ○
- D: lichen planus ○
- E: tinea corporis ○

Question 42 ⌄

Next Question

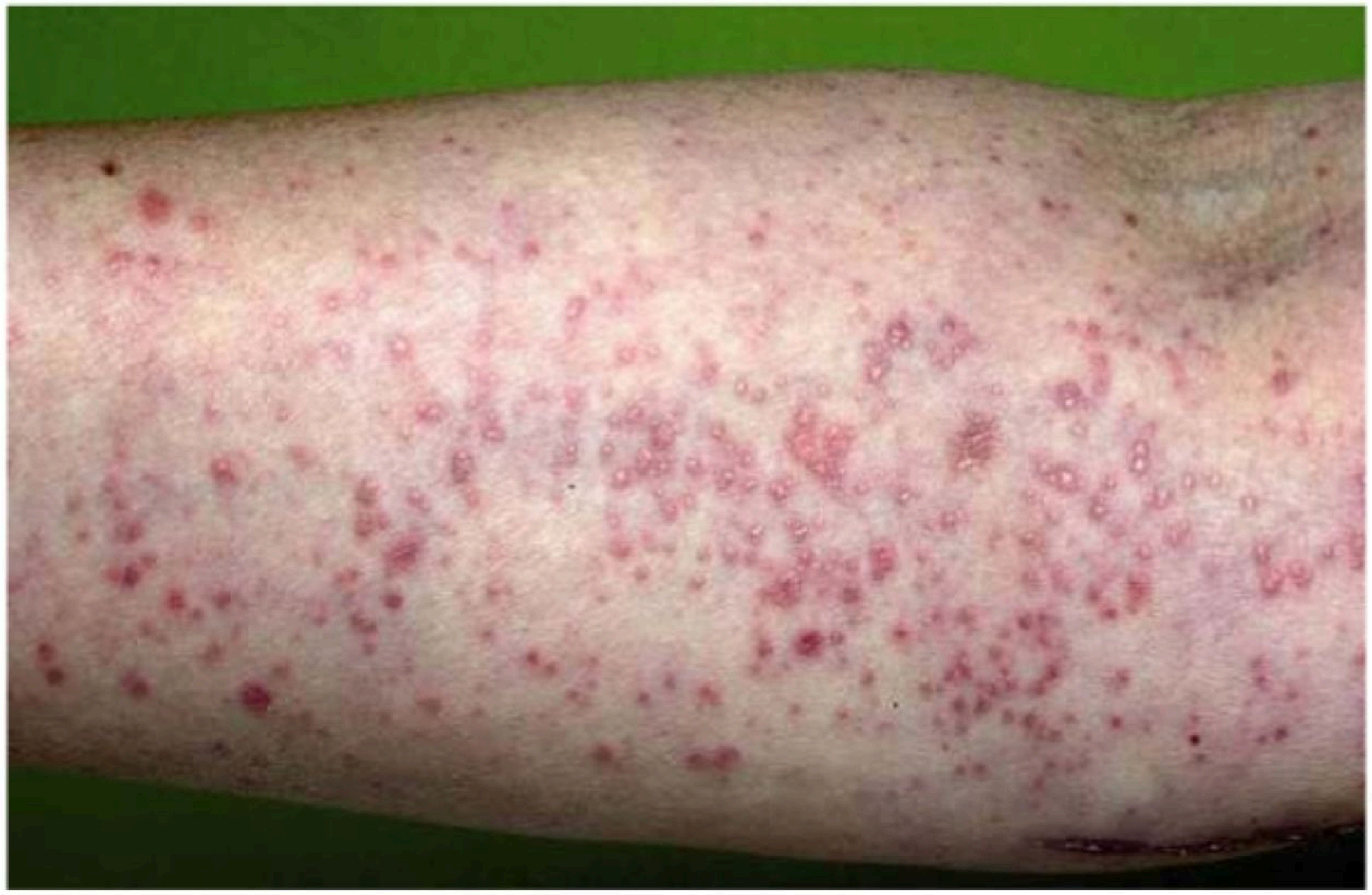
Question 42

No Answer Given

Incorrect

A 51-year-old woman presented with a 4-month history of an itchy rash, which had begun on her feet and progressed to affect her forearms and lower back. She was otherwise well and was taking no systemic medication.

On examination, she had a symmetrical papular rash (see image).



What is the most likely diagnosis?

Answers

- A: atopic eczema
- B: dermatitis herpetiformis
- C: guttate psoriasis
- D: lichen planus
- E: tinea corporis

Correct answer: D

Explanation

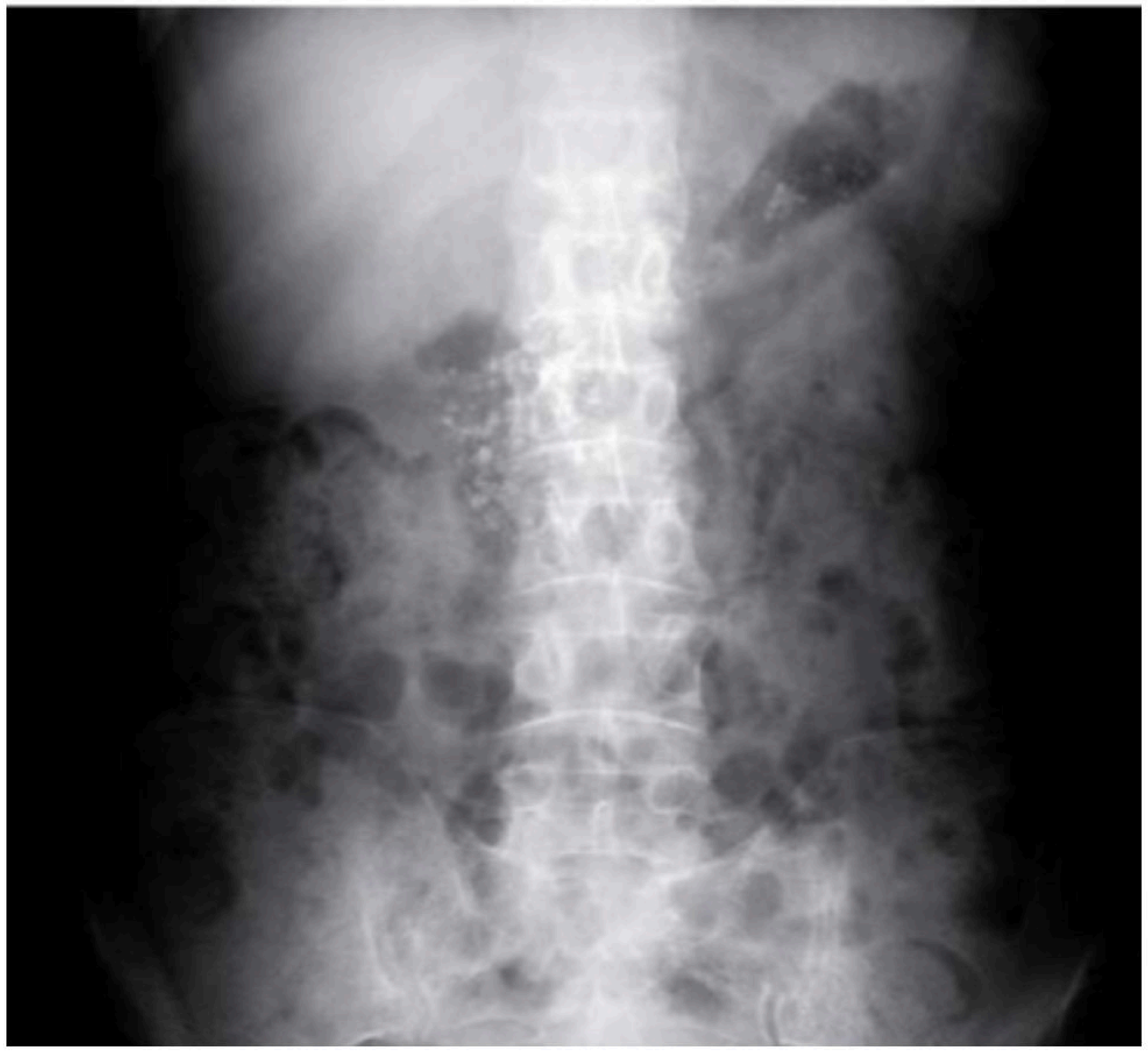
(30%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Lichen planus causes purple, flat-top papules as shown in the image. Dermatitis herpetiformis classically affects extensor aspects of limbs and lesions are vesicles or excoriations rather than papules. Tinea corporis usually has an annular configuration and, as with atopic eczema and guttate psoriasis, usually produces scale.

Question 43

A 40-year-old man, with type 1 diabetes mellitus and a 20-year history of excessive alcohol intake, presented to the emergency department with a history of severe dull upper abdominal pain associated with nausea, anorexia and diarrhoea.

A plain X-ray of abdomen was performed (see image).



What is the most likely diagnosis?

- A: calcified gallstones ○
- B: chronic pancreatitis ○
- C: ischaemic colitis ○
- D: nephrocalcinosis ○
- E: tuberculous adenitis ○

Question 43

Next Question

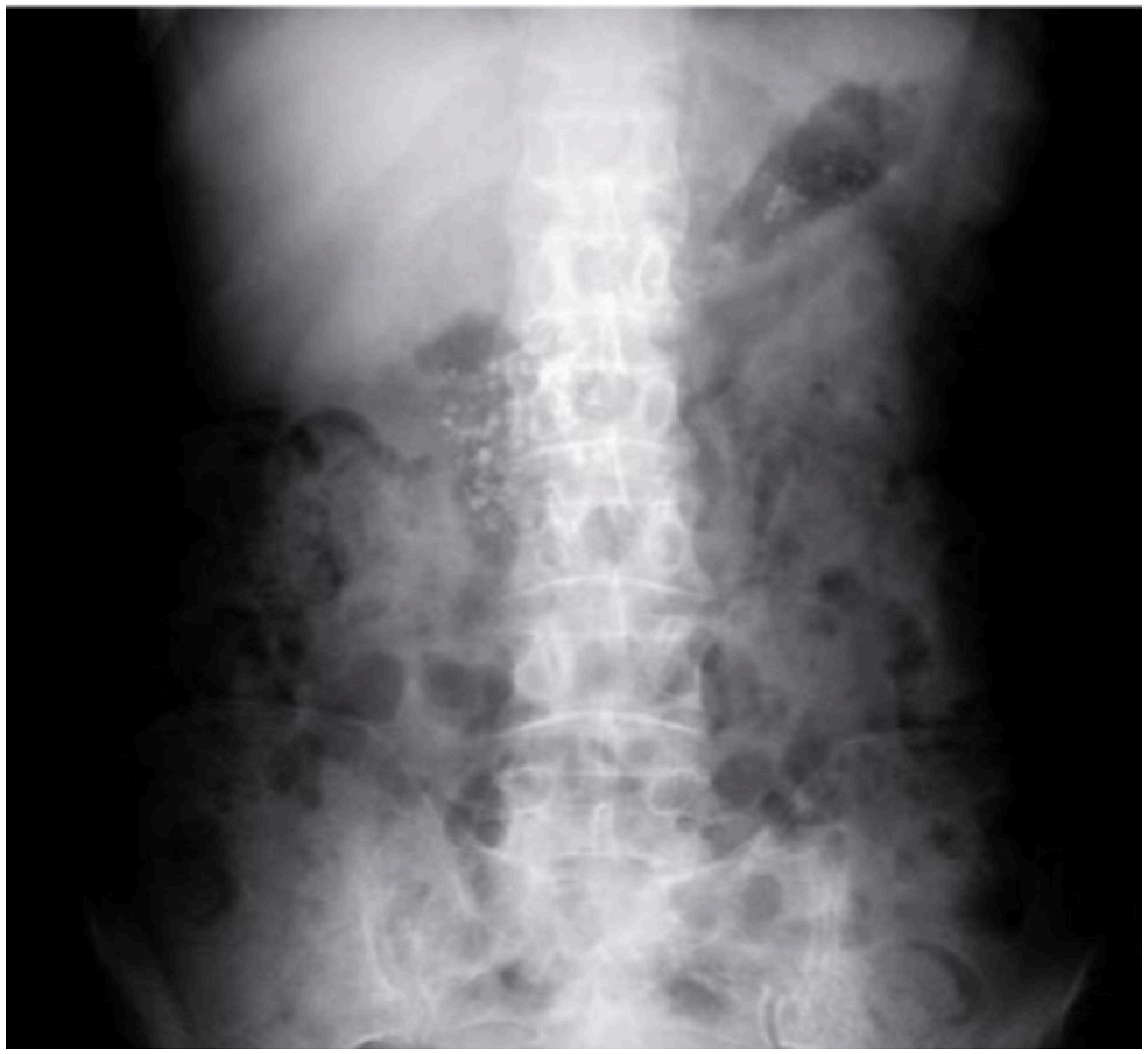
Question 43

No Answer Given

Incorrect

A 40-year-old man, with type 1 diabetes mellitus and a 20-year history of excessive alcohol intake, presented to the emergency department with a history of severe dull upper abdominal pain associated with nausea, anorexia and diarrhoea.

A plain X-ray of abdomen was performed (see image).



What is the most likely diagnosis?

Answers

- A: calcified gallstones
- B: chronic pancreatitis
- C: ischaemic colitis
- D: nephrocalcinosis
- E: tuberculous adenitis

Correct answer: B

Explanation

(95%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The plain X-ray of abdomen shows speckled calcification in the line of the pancreas. The high alcohol intake and dull epigastric pain are compatible with chronic pancreatitis, and probable pancreatic insufficiency resulting in steatorrhoea.

Question 44

A 68-year-old woman attended the movement disorder clinic, accompanied by her son. For 6 months, she had been bothered by a resting tremor affecting her right hand, associated with stiffness and slowness of movement. She and her son were informed that the symptoms were suggestive of idiopathic Parkinson's disease.

Her son was worried about his own health and wanted some information regarding early signs of Parkinson's disease.

What symptom is most likely to be associated with an increased risk of Parkinson's disease?

A: excessive daytime sleepiness ○

B: insomnia ○

C: rapid eye movement-sleep behaviour disorder ○

D: sleep apnoea ○

E: somnambulance ○

Question 44

No Answer Given

Incorrect

A 68-year-old woman attended the movement disorder clinic, accompanied by her son. For 6 months, she had been bothered by a resting tremor affecting her right hand, associated with stiffness and slowness of movement. She and her son were informed that the symptoms were suggestive of idiopathic Parkinson’s disease.

Her son was worried about his own health and wanted some information regarding early signs of Parkinson’s disease.

What symptom is most likely to be associated with an increased risk of Parkinson’s disease?

Answers

A: excessive daytime sleepiness
B: insomnia
C: rapid eye movement-sleep behaviour disorder
D: sleep apnoea
E: somnambulance

Correct answer: C

Explanation

(35%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Rapid eye movement (REM) behaviour disorder (RBD) is the correct answer. RBD is a parasomnia in which the subjects act out dreams with physical movements that are considered to be the equivalent of what they are doing in their dreams. Dreams often include events that trigger wild motions and flailing of limbs that can be harmful to a bed partner or the patient themselves. The presence of neurological disorders have shown to increase the risk of RBD by as much as 50%, including Parkinson’s disease and multiple system atrophy, and RBD in people without these disorders could indicate an increased risk of developing them in the future.

Excessive daytime sleepiness (hypersomnia) is a sleep-related disorder that causes excessive daytime sleepiness in people, often regardless of the presence of other sleeping disorders, or poor sleep hygiene. Insomnia is difficulty falling or staying asleep. It may be primary (defined as sleeplessness that is not attributable to a medical, psychiatric or environmental cause) or secondary (due to co-existing medical conditions). Sleep apnoea is a common disorder involving breathing interruptions during sleep. The most common type is obstructive sleep apnoea. Somnambulance is characterised by a person doing activities during an apparent sleep, such as walking about and sitting up in bed.

Question 45 ⌄
Next Question

Question 45

A previously well 64-year-old woman presented with haemoptysis. Biopsy of a right upper lobe endobronchial lesion confirmed the diagnosis of non-small cell bronchogenic carcinoma.

Investigations:

FEV_1	65% predicted
FVC	78% predicted
CT scan of chest and abdomen	3.5-cm mass in right upper lobe with ipsilateral hilar lymph node enlargement; no disease below diaphragm
PET-CT scan	increased uptake in right upper lobe and ipsilateral hilar nodes (N1 disease)

What is the most appropriate management?

- A: chemotherapy ○
- B: palliative radiotherapy ○
- C: pneumonectomy ○
- D: radical radiotherapy ○
- E: radiofrequency ablation ○

Question 45

No Answer Given

Incorrect

A previously well 64-year-old woman presented with haemoptysis. Biopsy of a right upper lobe endobronchial lesion confirmed the diagnosis of non-small cell bronchogenic carcinoma.

Investigations:

FEV_1	65% predicted
FVC	78% predicted
CT scan of chest and abdomen	3.5-cm mass in right upper lobe with ipsilateral hilar lymph node enlargement; no disease below diaphragm
PET-CT scan	increased uptake in right upper lobe and ipsilateral hilar nodes (N1 disease)

What is the most appropriate management?

Answers

A: chemotherapy
B: palliative radiotherapy
C: pneumonectomy
D: radical radiotherapy
E: radiofrequency ablation

Correct answer: C

Explanation

(46%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman has a localised non-small cell bronchial carcinoma (T2a, N1, M0, stage IIB) with spread of her primary tumour to the local hilar nodes. The goal of treatment in such cases is cure if possible and the optimal form of treatment is surgery – Answer C. If the FEV_1 is >60% predicted with no significant comorbid contraindications and a good performance status (0–1), a pneumonectomy offers a 5-year survival of approximately 35% compared to radical radiotherapy at 15%. Chemotherapy is not indicated as primary treatment in stage IIB non-small cell carcinoma and radiofrequency ablation is used to treat early non-small cell tumours or when surgery is either refused or not feasible in an attempt to reduce the size of the tumour. Palliative radiotherapy would only be considered if she was not fit enough for surgery or radical radiotherapy because of other comorbid problems.

Question 46

A 72-year-old woman presented with weakness of her right foot and numbness in her right hand. She had a 20-year history of rheumatoid arthritis and also had longstanding type 2 diabetes mellitus and hypertension. Her medication comprised gliclazide, amlodipine, atorvastatin and sulfasalazine.

On examination, she had chronic rheumatoid changes in her hands and feet, and subcutaneous nodules at her elbows. She had bruises in her nailfolds, and her right index fingertip was cold and discoloured. Neurological examination showed altered sensation in all of the fingers of her right hand. She was unable to dorsiflex her right ankle.

Investigations:

ESR	110 mm/1st h (<30)
anti-citrullinated peptide antigen antibodies:	
cyclic citrullinated peptide (CCP)	260 U/mL (<10)
anti-double-stranded DNA antibodies (ELISA)	negative
ANCA:	
anti-PR3 antibodies	1 U/mL (<10)
anti-MPO antibodies	32 U/mL (<10)
antinuclear antibodies	1:80 dilution (negative at 1:20)
extractable nuclear antigen (ENA) antibodies	negative

What is the most likely cause of her symptoms?

A: amyloidosis ○

B: diabetes mellitus ○

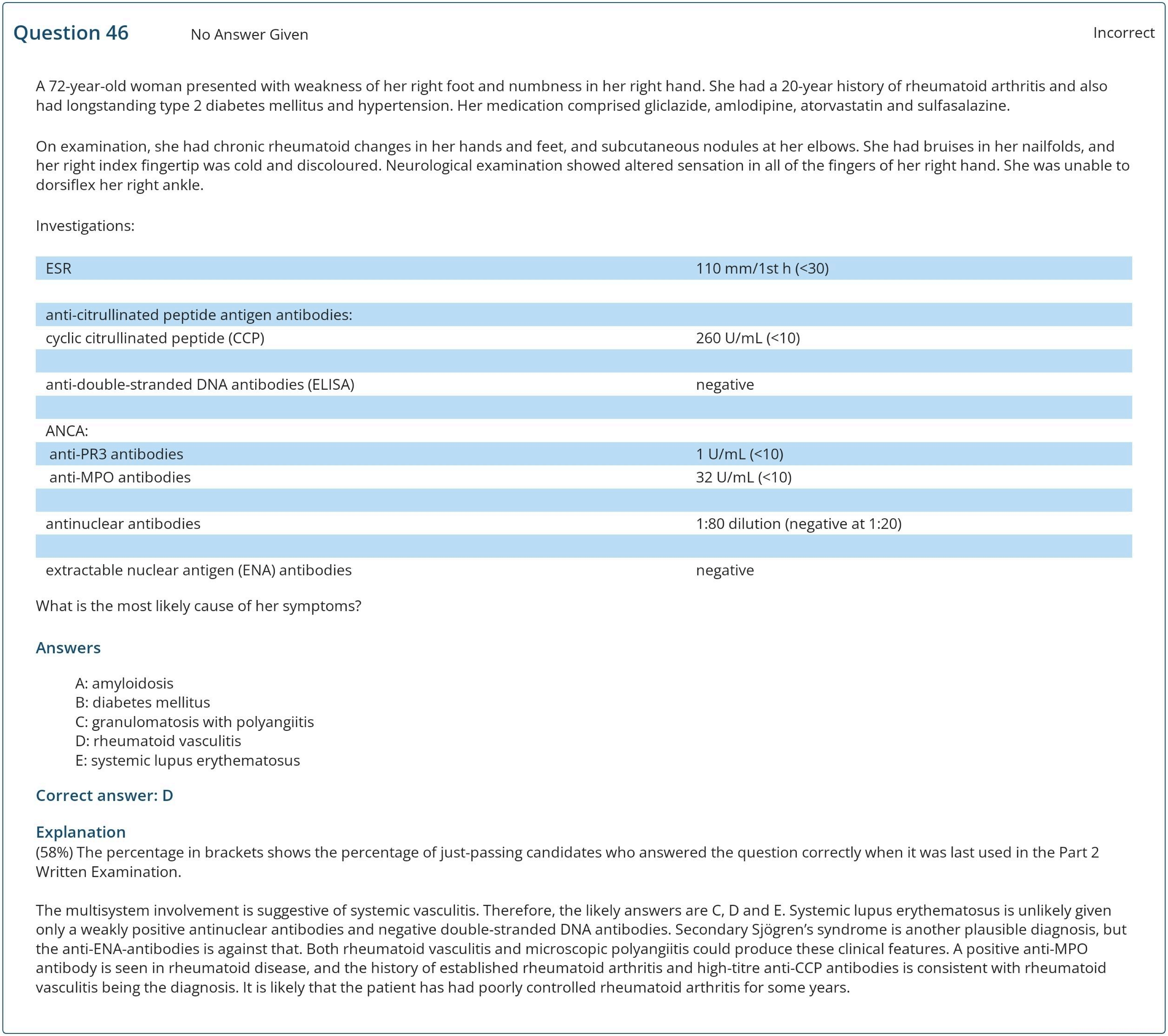
C: granulomatosis with polyangiitis ○

D: rheumatoid vasculitis ○

E: systemic lupus erythematosus ○

Question 46 ⌄

Next Question



Question 46

No Answer Given

Incorrect

A 72-year-old woman presented with weakness of her right foot and numbness in her right hand. She had a 20-year history of rheumatoid arthritis and also had longstanding type 2 diabetes mellitus and hypertension. Her medication comprised gliclazide, amlodipine, atorvastatin and sulfasalazine.

On examination, she had chronic rheumatoid changes in her hands and feet, and subcutaneous nodules at her elbows. She had bruises in her nailfolds, and her right index fingertip was cold and discoloured. Neurological examination showed altered sensation in all of the fingers of her right hand. She was unable to dorsiflex her right ankle.

Investigations:

ESR	110 mm/1st h (<30)
anti-citrullinated peptide antigen antibodies:	
cyclic citrullinated peptide (CCP)	260 U/mL (<10)
anti-double-stranded DNA antibodies (ELISA)	negative
ANCA:	
anti-PR3 antibodies	1 U/mL (<10)
anti-MPO antibodies	32 U/mL (<10)
antinuclear antibodies	1:80 dilution (negative at 1:20)
extractable nuclear antigen (ENA) antibodies	negative

What is the most likely cause of her symptoms?

Answers

A: amyloidosis
B: diabetes mellitus
C: granulomatosis with polyangiitis
D: rheumatoid vasculitis
E: systemic lupus erythematosus

Correct answer: D

Explanation

(58%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The multisystem involvement is suggestive of systemic vasculitis. Therefore, the likely answers are C, D and E. Systemic lupus erythematosus is unlikely given only a weakly positive antinuclear antibodies and negative double-stranded DNA antibodies. Secondary Sjögren’s syndrome is another plausible diagnosis, but the anti-ENA-antibodies is against that. Both rheumatoid vasculitis and microscopic polyangiitis could produce these clinical features. A positive anti-MPO antibody is seen in rheumatoid disease, and the history of established rheumatoid arthritis and high-titre anti-CCP antibodies is consistent with rheumatoid vasculitis being the diagnosis. It is likely that the patient has had poorly controlled rheumatoid arthritis for some years.

Question 47

A 32-year-old African man was admitted with a 2-week history of fevers and intermittent haemoptysis. He was known to be HIV positive.

On examination, his temperature was 37.5°C and he had generalised lymphadenopathy. He had patchy oral candidiasis and seborrhoeic dermatitis. His chest was clear, and abdominal examination was normal.

Investigations:

haemoglobin	107 g/L (130–180)
white cell count	13.5 × 10^9/L (4.0–11.0)
neutrophil count	11.9 × 10^9/L (1.5–7.0)
platelet count	103 × 10^9/L (150–400)
serum alkaline phosphatase	100 U/L (45–105)
serum CRP	95 mg/L (<10)

chest X-ray	mediastinal lymphadenopathy; no focal lung infiltrate

What further investigation is most likely to identify the cause of this patient's haemoptysis?

A: bronchoscopy ○

B: CT scan of chest ○

C: sputum cytology ○

D: sputum microscopy and culture ○

E: ventilation/perfusion isotope lung scan ○

Question 47 ⌄

Next Question

Question 47

No Answer Given

Incorrect

A 32-year-old African man was admitted with a 2-week history of fevers and intermittent haemoptysis. He was known to be HIV positive.

On examination, his temperature was 37.5°C and he had generalised lymphadenopathy. He had patchy oral candidiasis and seborrhoeic dermatitis. His chest was clear, and abdominal examination was normal.

Investigations:

haemoglobin	107 g/L (130–180)
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platelet count	103 × 10^9/L (150–400)
serum alkaline phosphatase	100 U/L (45–105)
serum CRP	95 mg/L (<10)
chest X-ray	mediastinal lymphadenopathy; no focal lung infiltrate

What further investigation is most likely to identify the cause of this patient’s haemoptysis?

Answers

A: bronchoscopy
B: CT scan of chest
C: sputum cytology
D: sputum microscopy and culture
E: ventilation/perfusion isotope lung scan

Correct answer: A

Explanation

(41%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient is most likely to have pulmonary tuberculosis as he has multiple risk factors for this infection. In order to confirm this diagnosis, it is necessary to culture Mycobacterium tuberculosis from a respiratory specimen. Bronchoscopy will produce the best respiratory specimen for staining and mycobacterial culture. Before performing a bronchoscopy, sputum specimens produced by spontaneous coughing (or by induction) should be sent for acid-fast staining and mycobacterial culture. Routine sputum microscopy and culture will only identify typical bacterial pathogens and will not isolate Mycobacterium tuberculosis.

Question 48

A 65-year-old man presented with a 1-week history of increasing drowsiness and confusion. He rapidly deteriorated and was intubated, ventilated and transferred to the intensive care unit. He had a history of recurrent chest infections in the previous year, treated with several courses of oral antibiotics. He had developed progressive difficulty in climbing the stairs over the previous 5 years. His father had died of ‘respiratory failure’ in his mid-fifties.

On examination, he had bilateral ptosis and facial weakness. His eye movements were normal. His neck flexors were weak. He had predominantly distal weakness affecting his arms and legs. His deep tendon reflexes were absent. His plantar responses were flexor. Sensory examination was normal.

What is the most likely underlying diagnosis?

A: Becker muscular dystrophy ○

B: Guillain–Barré syndrome ○

C: motor neurone disease ○

D: myasthenia gravis ○

E: myotonic dystrophy ○

Question 48

Next Question

Question 48

No Answer Given

Incorrect

A 65-year-old man presented with a 1-week history of increasing drowsiness and confusion. He rapidly deteriorated and was intubated, ventilated and transferred to the intensive care unit. He had a history of recurrent chest infections in the previous year, treated with several courses of oral antibiotics. He had developed progressive difficulty in climbing the stairs over the previous 5 years. His father had died of 'respiratory failure' in his mid-fifties.

On examination, he had bilateral ptosis and facial weakness. His eye movements were normal. His neck flexors were weak. He had predominantly distal weakness affecting his arms and legs. His deep tendon reflexes were absent. His plantar responses were flexor. Sensory examination was normal.

What is the most likely underlying diagnosis?

Answers

A: Becker muscular dystrophy
B: Guillain–Barré syndrome
C: motor neurone disease
D: myasthenia gravis
E: myotonic dystrophy

Correct answer: E

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient presents with neuromuscular ventilatory weakness, perhaps associated with an intercurrent chest infection, and has a 5-year history of progressively worsening leg weakness.

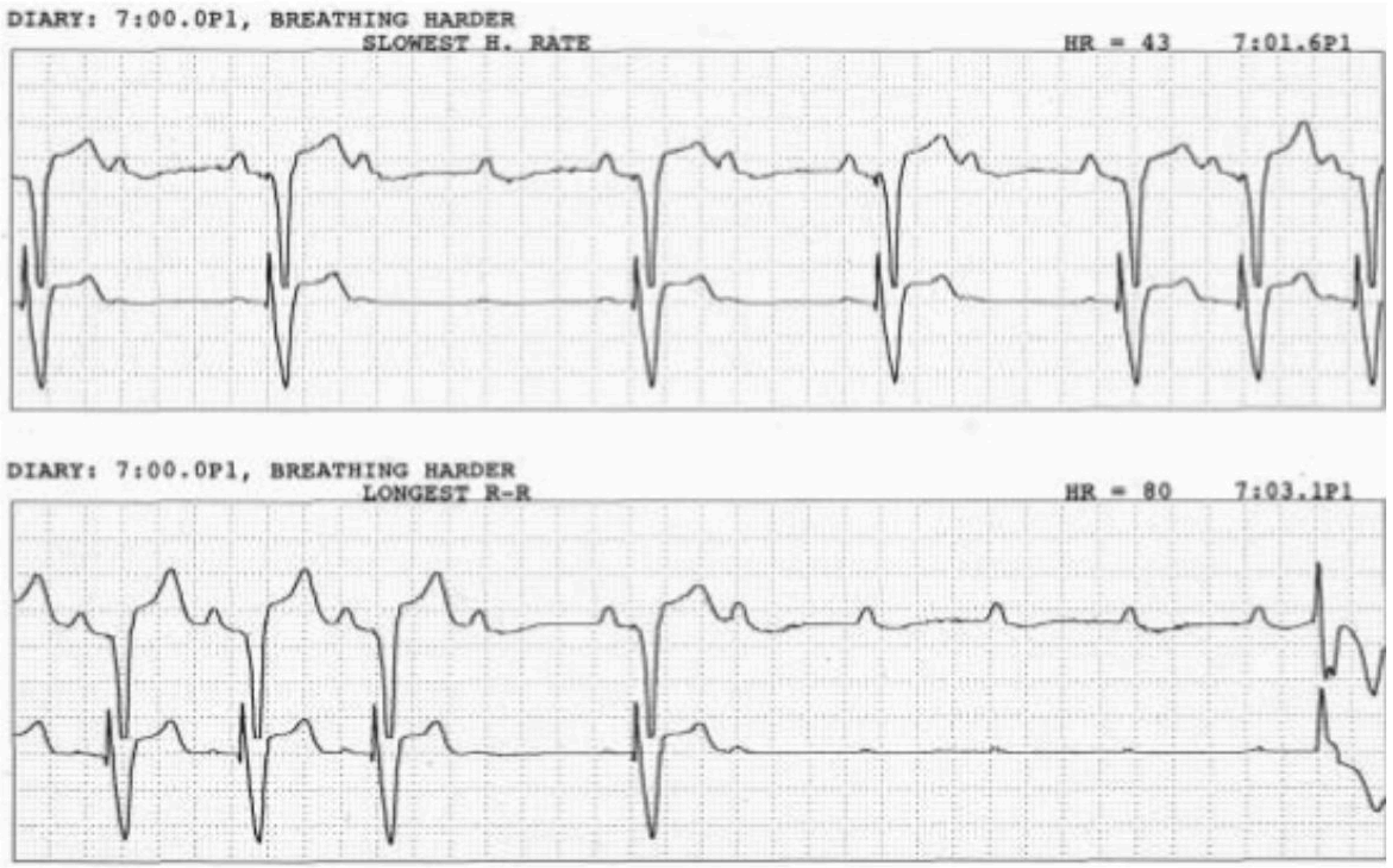
He is too old for Becker muscular dystrophy, which does not cause ventilatory difficulties. Upper motor neurone signs would be expected in motor neurone disease, and a patient with myasthenia gravis severe enough for ventilation to be required would have evidence of an eye movement disorder.

The long history suggestive of a pre-existing muscular condition makes myotonic dystrophy more likely than the Guillain–Barré syndrome and the clinical phenotype (bilateral ptosis, facial weakness, distal weakness) is entirely compatible with that diagnosis.

Question 49

A 75-year-old man presented to the outpatient clinic complaining of recurrent syncope. A dual-chamber pacemaker had been inserted 5 years previously.

On examination, his pulse was irregular. A 24-hour ambulatory ECG recording was obtained (see image).


DIARY: 7:00.0P1, BREATHING HARDER
SLOWEST H. RATE
HR = 43
7:01.6P1
DIARY: 7:00.0P1, BREATHING HARDER
LONGEST R-R
HR = 80
7:03.1P1

What is the most likely explanation for the abnormality shown?

A: atrial arrhythmia ○

B: atrial lead malfunction ○

C: electromagnetic interference ○

D: pacemaker syndrome ○

E: ventricular lead malfunction ○

Question 49 ⌄

Next Question

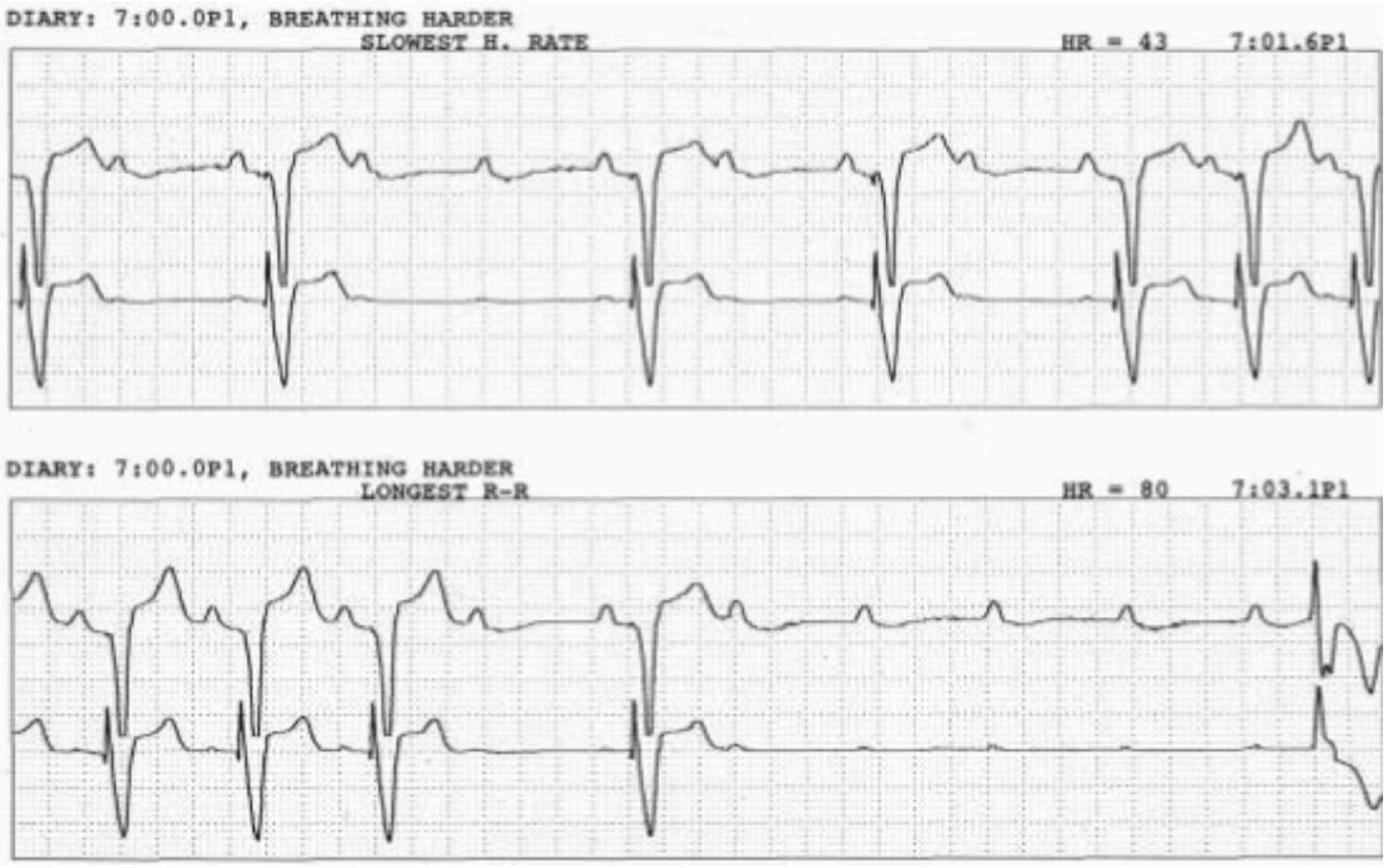
Question 49

No Answer Given

Incorrect

A 75-year-old man presented to the outpatient clinic complaining of recurrent syncope. A dual-chamber pacemaker had been inserted 5 years previously.

On examination, his pulse was irregular. A 24-hour ambulatory ECG recording was obtained (see image).


DIARY: 7:00.0P1, BREATHING HARDER
SLOWEST H. RATE
HR = 43
7:01.6P1
DIARY: 7:00.0P1, BREATHING HARDER
LONGEST R-R
HR = 80
7:03.1P1

What is the most likely explanation for the abnormality shown?

Answers

A: atrial arrhythmia
B: atrial lead malfunction
C: electromagnetic interference
D: pacemaker syndrome
E: ventricular lead malfunction

Correct answer: E

Explanation

(83%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The ECG shows regular P waves with no evidence of atrial arrhythmia. The pacemaker senses these correctly, the atrial circuit is inhibited and no atrial pacing spikes are seen. There are no normally conducted P waves. There are intermittent ventricular pacing spikes which capture the ventricular myocardium and lead to a QRS complex. When present, the ventricular pacing spikes are appropriately triggered by the preceding P wave in the absence of a normally conducted QRS complex. There are no ventricular pacing spikes that fail to capture. This implies that the ventricular pacing circuit is inappropriately sensing electrical activity, which it interprets incorrectly as a native QRS complex and therefore is inhibited from delivering a ventricular pacing impulse. This intermittent fault is most likely to be due a pacing lead fracture, and this lead was implanted 5 years previously. There is no evidence of electromagnetic interference on the ECG strips shown. Pacemaker syndrome is a problem associated with single-chamber pacemakers.

Question 50

A 29-year-old woman was admitted to hospital with a 12-hour history of severe throbbing headache and right-sided weakness. She was otherwise well with no significant past medical history and was taking no medication apart from the combined oral contraceptive pill. She denied any regular illicit drug use but admitted to taking an ‘ecstasy’ tablet 2 days previously.

Examination confirmed decreased power on the right, with brisk tendon reflexes and an extensor plantar response. Her pupils were equal and reactive to light. Fundoscopy was normal.

Investigations:

CT scan of head (18 h after symptom onset)	no evidence of haemorrhage

CSF	
opening pressure	270 mmH_2O (120–250)
total protein	0.41 g/L (0.15–0.45)
xanthochromia	none seen

What is the most likely diagnosis?

A: cerebral infarction ○

B: cerebral venous thrombosis ○

C: hemiplegic migraine ○

D: idiopathic intracranial hypertension ○

E: subarachnoid haemorrhage ○

Question 50 ⌄

Next Question

Question 50

No Answer Given

Incorrect

A 29-year-old woman was admitted to hospital with a 12-hour history of severe throbbing headache and right-sided weakness. She was otherwise well with no significant past medical history and was taking no medication apart from the combined oral contraceptive pill. She denied any regular illicit drug use but admitted to taking an 'ecstasy' tablet 2 days previously.

Examination confirmed decreased power on the right, with brisk tendon reflexes and an extensor plantar response. Her pupils were equal and reactive to light. Fundoscopy was normal.

Investigations:

CT scan of head (18 h after symptom onset)	no evidence of haemorrhage

CSF	
opening pressure	270 mmH$_2$O (120–250)
total protein	0.41 g/L (0.15–0.45)
xanthochromia	none seen

What is the most likely diagnosis?

Answers

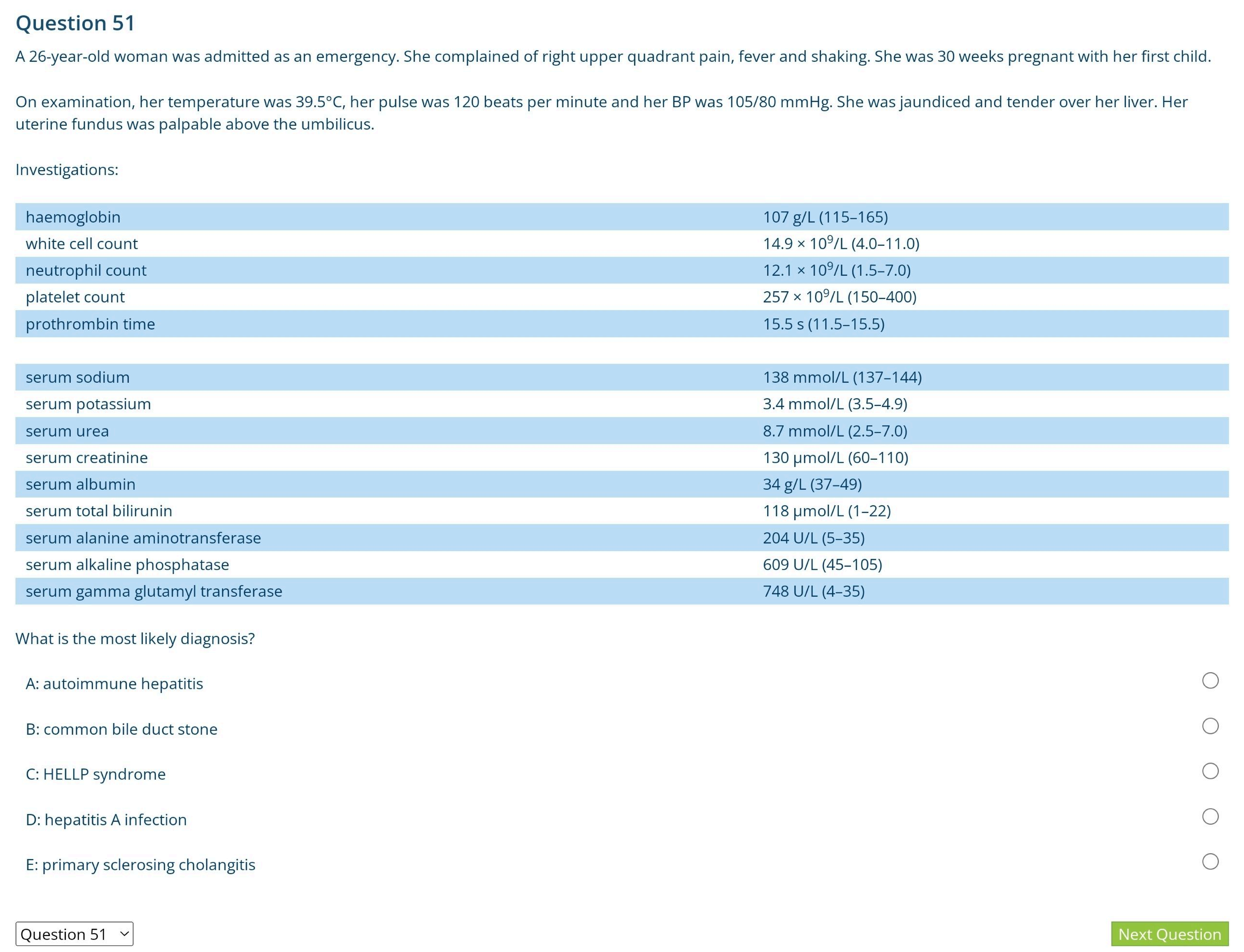
A: cerebral infarction
B: cerebral venous thrombosis
C: hemiplegic migraine
D: idiopathic intracranial hypertension
E: subarachnoid haemorrhage

Correct answer: B

Explanation

(57%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The scenario is based around a young woman presenting with headache and hemiplegia. All of the conditions can occur in a young individual, although cerebral infarction is less likely and not usually associated with severe headache. A marginally raised opening pressure and normal protein points away from idiopathic intracranial hypertension and subarachnoid haemorrhage. The history of combined oral contraceptive pill (COCP) and ecstasy use is important and makes the diagnosis of cerebral venous thrombosis more likely. In addition to the COCP and ecstasy, dehydration can also cause hypercoagulation, leading to cerebral venous thrombosis.



Question 51

A 26-year-old woman was admitted as an emergency. She complained of right upper quadrant pain, fever and shaking. She was 30 weeks pregnant with her first child.

On examination, her temperature was 39.5°C, her pulse was 120 beats per minute and her BP was 105/80 mmHg. She was jaundiced and tender over her liver. Her uterine fundus was palpable above the umbilicus.

Investigations:

haemoglobin	107 g/L (115–165)
white cell count	14.9 × 10^9/L (4.0–11.0)
neutrophil count	12.1 × 10^9/L (1.5–7.0)
platelet count	257 × 10^9/L (150–400)
prothrombin time	15.5 s (11.5–15.5)

serum sodium	138 mmol/L (137–144)
serum potassium	3.4 mmol/L (3.5–4.9)
serum urea	8.7 mmol/L (2.5–7.0)
serum creatinine	130 μmol/L (60–110)
serum albumin	34 g/L (37–49)
serum total bilirunin	118 μmol/L (1–22)
serum alanine aminotransferase	204 U/L (5–35)
serum alkaline phosphatase	609 U/L (45–105)
serum gamma glutamyl transferase	748 U/L (4–35)

What is the most likely diagnosis?

A: autoimmune hepatitis ○

B: common bile duct stone ○

C: HELLP syndrome ○

D: hepatitis A infection ○

E: primary sclerosing cholangitis ○

Question 51

No Answer Given

Incorrect

A 26-year-old woman was admitted as an emergency. She complained of right upper quadrant pain, fever and shaking. She was 30 weeks pregnant with her first child.

On examination, her temperature was 39.5°C, her pulse was 120 beats per minute and her BP was 105/80 mmHg. She was jaundiced and tender over her liver. Her uterine fundus was palpable above the umbilicus.

Investigations:

haemoglobin	107 g/L (115–165)
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serum sodium	138 mmol/L (137–144)
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serum alanine aminotransferase	204 U/L (5–35)
serum alkaline phosphatase	609 U/L (45–105)
serum gamma glutamyl transferase	748 U/L (4–35)

What is the most likely diagnosis?

Answers

A: autoimmune hepatitis
B: common bile duct stone
C: HELLP syndrome
D: hepatitis A infection
E: primary sclerosing cholangitis

Correct answer: B

Explanation

(56%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The right upper quadrant pain, fever, and jaundice (Charcot's triad) would point towards ascending cholangitis. In this patient, this is most likely to be secondary to a common bile duct stone.

HELLP syndrome does not typically cause pain or fever, and the platelet count is normal. Autoimmune hepatitis and hepatitis A are characterised by a predominant transaminitis. Although primary sclerosing cholangitis may present with an obstructive pattern of liver function tests, pain and fever are unusual, unless there is secondary infective cholangitis.

Question 52

A 39-year-old South African man was admitted with a 3-week history of fever and night sweats. He had lost 8 kg in weight. He was HIV positive and had declined antiretroviral therapy.

On examination, his temperature was 38.9°C, his pulse was 92 beats per minute and of low volume, and his BP was 120/75 mmHg. He had no rash or lymphadenopathy. His JVP was 2 cm above the sternal angle. His heart sounds were normal. He had a soft pericardial rub at the left sternal border. His chest was clear. Abdominal examination was normal.

Investigations:

haemoglobin	110 g/L (130–180)
white cell count	15.2 × 10^9/L (4.0–11.0)
neutrophil count	9.3 × 10^9/L (1.5–7.0)
lymphocyte count	4.9 × 10^9/L (1.5–4.0)
ESR	89 mm/1st h (<15)

chest X-ray	marked globular cardiomegaly

echocardiogram	3-cm global pericardial effusion

What is the most likely cause of the pericardial effusion?

A: autoimmune disease ○

B: lymphoma ○

C: pyogenic infection ○

D: tuberculosis ○

E: viral infection ○

Question 52 ⌄

Next Question

Question 52

No Answer Given

Incorrect

A 39-year-old South African man was admitted with a 3-week history of fever and night sweats. He had lost 8 kg in weight. He was HIV positive and had declined antiretroviral therapy.

On examination, his temperature was 38.9°C, his pulse was 92 beats per minute and of low volume, and his BP was 120/75 mmHg. He had no rash or lymphadenopathy. His JVP was 2 cm above the sternal angle. His heart sounds were normal. He had a soft pericardial rub at the left sternal border. His chest was clear. Abdominal examination was normal.

Investigations:

haemoglobin	110 g/L (130–180)
white cell count	15.2 × 10^9/L (4.0–11.0)
neutrophil count	9.3 × 10^9/L (1.5–7.0)
lymphocyte count	4.9 × 10^9/L (1.5–4.0)
ESR	89 mm/1st h (<15)

chest X-ray	marked globular cardiomegaly

echocardiogram	3-cm global pericardial effusion

What is the most likely cause of the pericardial effusion?

Answers

A: autoimmune disease
B: lymphoma
C: pyogenic infection
D: tuberculosis
E: viral infection

Correct answer: D

Explanation

(88%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has a large pericardial effusion and the pyrexia of 38.9°C suggests an infective aetiology. A 3-week history of fever and night sweats makes a tuberculous pericardial effusion a possibility and viral or other bacterial causes less likely. In a patient from Africa with HIV infection, tuberculous pericarditis is the most likely cause. The likelihood of infection with tuberculosis (TB) is dependent upon the prevalence of TB in the population in question. Lymphoma is a possibility, but less likely.

Question 53

A 19-year-old man presented to the emergency department following a sudden collapse after taking some unidentified tablets at a nightclub. He complained of shivering and diarrhoea.

On examination, his temperature was 40.2°C, his pulse was 136 beats per minute and regular, and his BP was 176/112 mmHg. He was tremulous and agitated. His abdomen was soft but he had increased bowel sounds. Neurological examination showed dilated pupils, hyper-reflexia and myoclonus of his limbs. His GCS was 14.

Investigations:

serum sodium	138 mmol/L (137–144)
serum potassium	5.2 mmol/L (3.5–4.9)
serum urea	7.8 mmol/L (2.5–7.0)
serum creatinine	121 µmol/L (60–110)
serum creatine kinase	31 600 U/L (24–195)

What is the most likely diagnosis?

A: amfetamine poisoning ○

B: anticholinergic poisoning ○

C: malignant hyperthermia ○

D: neuroleptic malignant syndrome ○

E: serotonin syndrome ○

Question 53

Next Question

Question 53

No Answer Given

Incorrect

A 19-year-old man presented to the emergency department following a sudden collapse after taking some unidentified tablets at a nightclub. He complained of shivering and diarrhoea.

On examination, his temperature was 40.2°C, his pulse was 136 beats per minute and regular, and his BP was 176/112 mmHg. He was tremulous and agitated. His abdomen was soft but he had increased bowel sounds. Neurological examination showed dilated pupils, hyper-reflexia and myoclonus of his limbs. His GCS was 14.

Investigations:

serum sodium	138 mmol/L (137–144)
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serum urea	7.8 mmol/L (2.5–7.0)
serum creatinine	121 µmol/L (60–110)
serum creatine kinase	31 600 U/L (24–195)

What is the most likely diagnosis?

Answers

A: amfetamine poisoning
B: anticholinergic poisoning
C: malignant hyperthermia
D: neuroleptic malignant syndrome
E: serotonin syndrome

Correct answer: E

Explanation

(10%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Answering this question relies on the interpretation of the clinical presentation of agitation, hyperthermia, tachycardia and severe hypertension with neurological involvement. The creatine kinase (CK) is suggestive of rhabdomyolysis with some impairment of renal function.

The scenario is classical for serotonin syndrome. Although anticholinergic poisoning can be associated with hyperpyrexia and tachycardia, this presentation would not be typical and the CK would not be significantly elevated. Malignant hyperthermia is classically associated with anaesthesia. The clinical presentation of the other three conditions is similar, with serotonin syndrome and neuroleptic malignant syndrome (NMS) almost identical. There is no drug history to tease out the answer, but serotonin syndrome is more likely to present with shivering, hyper-reflexia and clonus (NMS classically has lead-pipe rigidity). Amfetamine poisoning can affect dopamine, serotonin and noradrenaline neurotransmitters but does not usually affect CK levels as much as in this scenario.

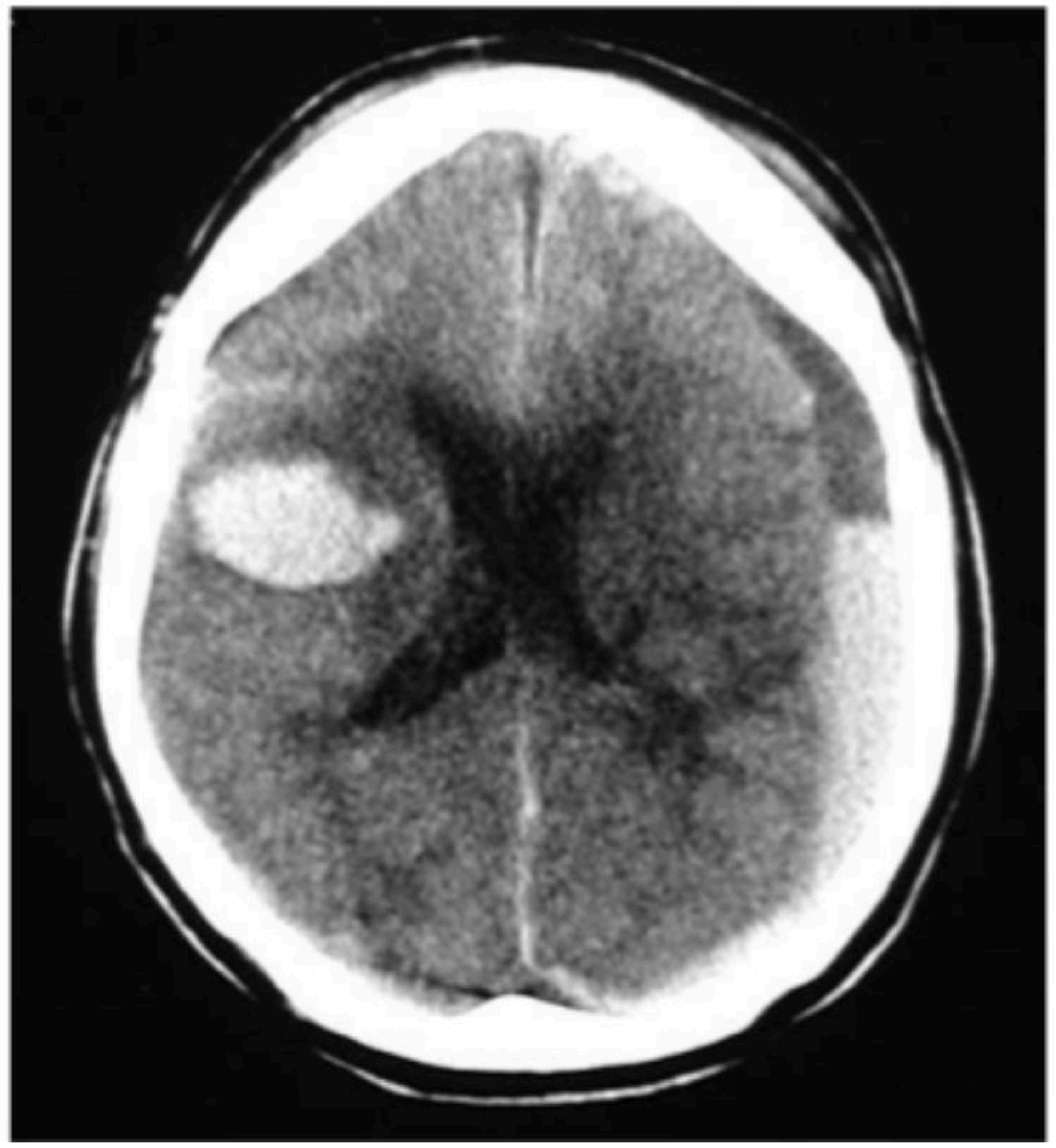
Question 54

A 65-year-old man was brought to the emergency department after falling down stairs. He was unconscious and there was no history available.

On examination, his GCS was 5. Both plantar responses were extensor. He was covered in bruises.

Investigations:

CT scan of head (unenhanced)	see image



What is the most likely cause of this imaging appearance?

A: coagulopathy ○

B: haemorrhage into tumour ○

C: hypertensive haemorrhage ○

D: subarachnoid haemorrhage ○

E: traumatic haemorrhage ○

Question 54

Next Question

Question 54

No Answer Given

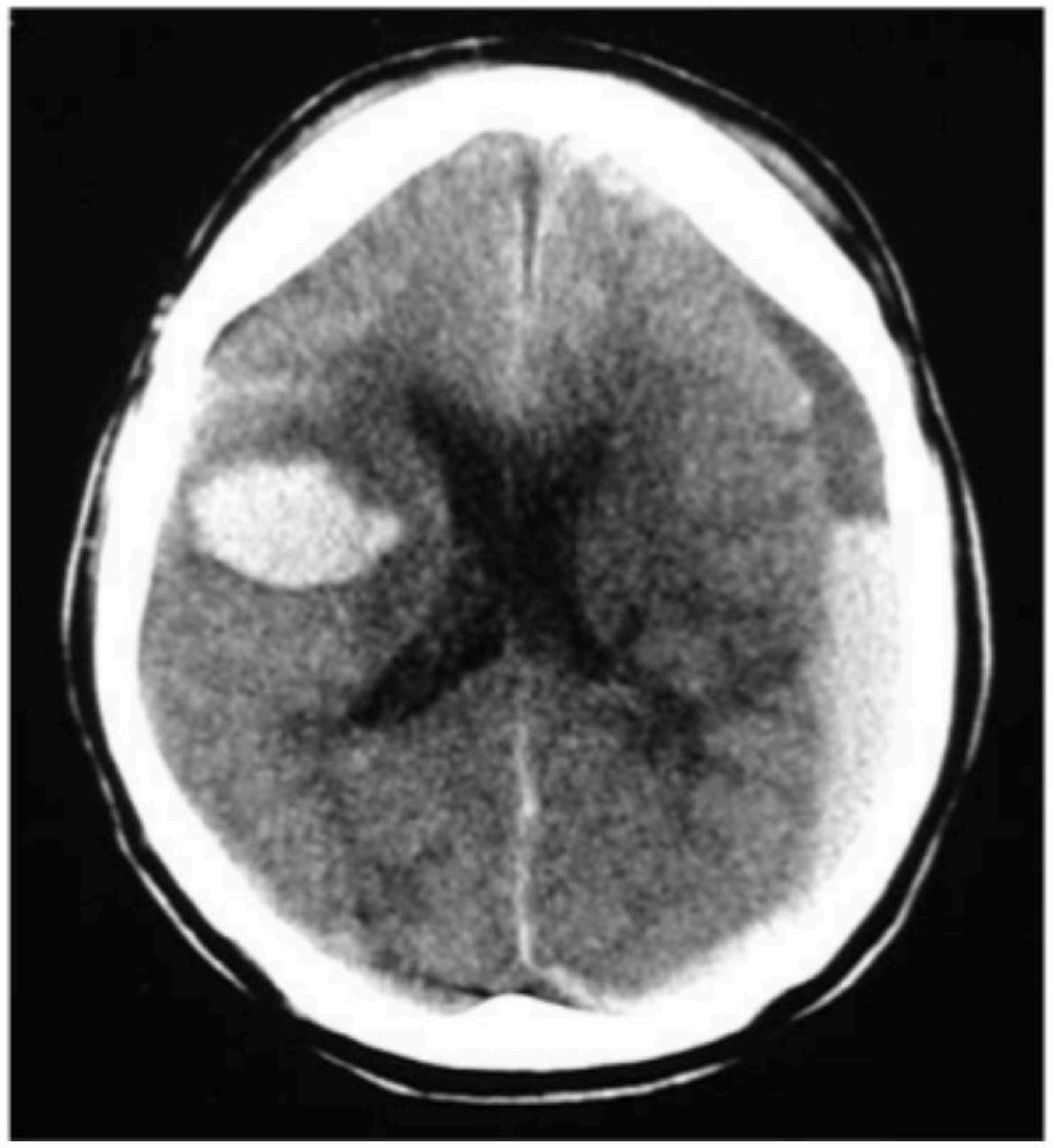
Incorrect

A 65-year-old man was brought to the emergency department after falling down stairs. He was unconscious and there was no history available.

On examination, his GCS was 5. Both plantar responses were extensor. He was covered in bruises.

Investigations:

CT scan of head (unenhanced)	see image



What is the most likely cause of this imaging appearance?

Answers

A: coagulopathy
B: haemorrhage into tumour
C: hypertensive haemorrhage
D: subarachnoid haemorrhage
E: traumatic haemorrhage

Correct answer: E

Explanation

(31%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient is a 65-year-old man who has been brought to casualty following a fall down the stairs and is unconscious. A CT scan shows an acute intraparenchymal haemorrhage in his right hemisphere and a subacute subdural haematoma that is at least 24 hours old overlying the left hemisphere and causing some midline shift. It may well be up to 3 or 4 days old. The patient is also covered in bruises.

A subdural haematoma is most likely to be secondary to head trauma and this is also suggested by the presentation.

Question 55

A 72-year-old man presented with increasing fatigue and sleepiness over the previous week. He had a history of small cell lung cancer, which was in complete remission after combination chemotherapy. He had completed prophylactic cranial irradiation 10 days previously.

Investigations:

haemoglobin	91 g/L (130–180)
white cell count	3.1 × 10^9/L (4.0–11.0)
neutrophil count	1.6 × 10^9/L (1.5–7.0)
platelet count	100 × 10^9/L (150–400)
serum sodium	132 mmol/L (137–144)
serum corrected calcium	2.41 mmol/L (2.20–2.60)

What is the most likely cause of his symptoms?

A: adverse effect of radiotherapy ○

B: anaemia ○

C: brain metastases ○

D: depression ○

E: hyponatraemia ○

Question 55 ⌄

Next Question

Question 55

No Answer Given

Incorrect

A 72-year-old man presented with increasing fatigue and sleepiness over the previous week. He had a history of small cell lung cancer, which was in complete remission after combination chemotherapy. He had completed prophylactic cranial irradiation 10 days previously.

Investigations:

haemoglobin	91 g/L (130–180)
white cell count	3.1 × 10^9/L (4.0–11.0)
neutrophil count	1.6 × 10^9/L (1.5–7.0)
platelet count	100 × 10^9/L (150–400)
serum sodium	132 mmol/L (137–144)
serum corrected calcium	2.41 mmol/L (2.20–2.60)

What is the most likely cause of his symptoms?

Answers

A: adverse effect of radiotherapy
B: anaemia
C: brain metastases
D: depression
E: hyponatraemia

Correct answer: A

Explanation

(45%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

We can presume this patient's chemotherapy to have been completed recently as prophylactic cranial irradiation would be given soon after inducing a complete response in his thoracic disease. Thus, it would be extremely unlikely that he has now developed brain metastases – particularly given the very recent radiotherapy. Anaemia, although likely to contribute to his fatigue, does not usually cause sleepiness and is likely to have been more chronic than his symptoms. The level of hyponatraemia is unlikely to be associated with significant symptoms. Although he has every reason to be depressed, generalised fatigue and sleepiness are common acute side effects of cranial irradiation making this the better answer.

Question 56

A 63-year-old man, who lived in a hostel for the homeless, was brought to the emergency department after collapsing. Other hostel residents reported that he had been staggering and speaking in a slurred voice for several hours. He had a history of depression, epilepsy and type 2 diabetes mellitus. His medication comprised phenytoin and gliclazide. He had a high alcohol intake, but it was not clear how much he had drunk that day.

On examination, his GCS was 12. His pulse was 96 beats per minute and regular, and his BP was 97/64 mmHg. Examination of his heart, lungs and abdomen was normal. He had horizontal nystagmus. He had no other focal neurological signs. Urinalysis showed ketones 1+.

Investigations:

serum sodium	132 mmol/L (137–144)
serum potassium	3.2 mmol/L (3.5–4.9)
serum chloride	110 mmol/L (95–107)
serum bicarbonate	18 mmol/L (20–28)
serum urea	2.9 mmol/L (2.5–7.0)
serum creatinine	119 µmol/L (60–110)
random plasma glucose	19.1 mmol/L
serum osmolality	295 mosmol/kg (278–300)

The blood gas analyser was faulty and was being repaired, so blood gas results were delayed.

What is the most likely cause of his present state?

A: diabetic ketoacidosis ○

B: ethanol intoxication ○

C: hyperosmolar hyperglycaemic state ○

D: methanol poisoning ○

E: phenytoin overdose ○

Question 56

Next Question

Question 56

No Answer Given

Incorrect

A 63-year-old man, who lived in a hostel for the homeless, was brought to the emergency department after collapsing. Other hostel residents reported that he had been staggering and speaking in a slurred voice for several hours. He had a history of depression, epilepsy and type 2 diabetes mellitus. His medication comprised phenytoin and gliclazide. He had a high alcohol intake, but it was not clear how much he had drunk that day.

On examination, his GCS was 12. His pulse was 96 beats per minute and regular, and his BP was 97/64 mmHg. Examination of his heart, lungs and abdomen was normal. He had horizontal nystagmus. He had no other focal neurological signs. Urinalysis showed ketones 1+.

Investigations:

serum sodium	132 mmol/L (137–144)
serum potassium	3.2 mmol/L (3.5–4.9)
serum chloride	110 mmol/L (95–107)
serum bicarbonate	18 mmol/L (20–28)
serum urea	2.9 mmol/L (2.5–7.0)
serum creatinine	119 µmol/L (60–110)
random plasma glucose	19.1 mmol/L
serum osmolality	295 mosmol/kg (278–300)

The blood gas analyser was faulty and was being repaired, so blood gas results were delayed.

What is the most likely cause of his present state?

Answers

A: diabetic ketoacidosis
B: ethanol intoxication
C: hyperosmolar hyperglycaemic state
D: methanol poisoning
E: phenytoin overdose

Correct answer: E

Explanation

(57%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has incoordination, slurred speech, depressed consciousness and nystagmus, all of which are features of phenytoin toxicity.

The urinalysis shows only ketones 1+ and the venous bicarbonate is only slightly low so the patient does not have significant ketoacidosis. Severe ethanol intoxication and hyperosmolar hyperglycaemic state can be excluded as serum osmolality is normal. Methanol poisoning causes a severe metabolic acidosis and a high anion gap, neither of which is present.

Question 57

A 75-year-old woman presented with fever and severe left iliac fossa pain. She was opening her bowels four times daily with semi-formed stool. She denied passing any blood. She smoked 20 cigarettes per day.

On examination, she had tachycardia and was tender in her left iliac fossa.

Investigations:

haemoglobin	133 g/L (115–165)
white cell count	18.5 × 10^9/L (4.0–11.0)
platelet count	535 × 10^9/L (150–400)

Blood and stool cultures were requested.

What is the most appropriate next investigation?

A: colonoscopy ○

B: CT scan of abdomen ○

C: mesenteric angiography ○

D: sigmoidoscopy ○

E: ultrasound scan of pelvis ○

Question 57

Next Question

Question 57

No Answer Given

Incorrect

A 75-year-old woman presented with fever and severe left iliac fossa pain. She was opening her bowels four times daily with semi-formed stool. She denied passing any blood. She smoked 20 cigarettes per day.

On examination, she had tachycardia and was tender in her left iliac fossa.

Investigations:

haemoglobin	133 g/L (115–165)
white cell count	18.5 × 10^9/L (4.0–11.0)
platelet count	535 × 10^9/L (150–400)

Blood and stool cultures were requested.

What is the most appropriate next investigation?

Answers

A: colonoscopy
B: CT scan of abdomen
C: mesenteric angiography
D: sigmoidoscopy
E: ultrasound scan of pelvis

Correct answer: B

Explanation

(40%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Severe left iliac fossa pain and fever would point strongly to a diagnosis of diverticulitis. A CT scan is the most suitable initial investigation for both the diagnosis and also to rule out abscess formation or perforation.

Question 58

A 35-year-old woman was found to have hypertension during her first pregnancy. At 30 weeks' gestation, her BP was 150/102 mmHg. Two weeks later, the readings were 156/106 mmHg and 160/102 mmHg. Her pregnancy was otherwise uncomplicated, and she had no proteinuria. She had no other medical history of note and took no regular medication.

What is the most appropriate antihypertensive drug?

- A: atenolol ○
- B: bendroflumethiazide ○
- C: labetalol ○
- D: losartan ○
- E: ramipril ○

Question 58 ⌄

Next Question

Question 58

No Answer Given

Incorrect

A 35-year-old woman was found to have hypertension during her first pregnancy. At 30 weeks' gestation, her BP was 150/102 mmHg. Two weeks later, the readings were 156/106 mmHg and 160/102 mmHg. Her pregnancy was otherwise uncomplicated, and she had no proteinuria. She had no other medical history of note and took no regular medication.

What is the most appropriate antihypertensive drug?

Answers

A: atenolol
B: bendroflumethiazide
C: labetalol
D: losartan
E: ramipril

Correct answer: C

Explanation

(81%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The patient has gestational hypertension and NICE guidelines (Hypertension in Pregnancy 2010) recommend labetalol to achieve a target BP of systolic <150 mmHg and diastolic BP between 80 and 100 mmHg. The NICE guideline suggests methyldopa and nifedipine as alternatives to labetalol. ACE inhibitors, angiotensin receptor blocking drugs (ARBs) and thiazide diuretics can all be associated with an increased risk of fetal abnormality.

Question 59

A 61-year-old man was admitted with a 2-month history of progressive dyspnoea, recurrent haemoptysis, rhinorrhoea, and several episodes of epigastric pain. His medical history included coronary artery bypass grafting following a myocardial infarction with severe left ventricular failure.

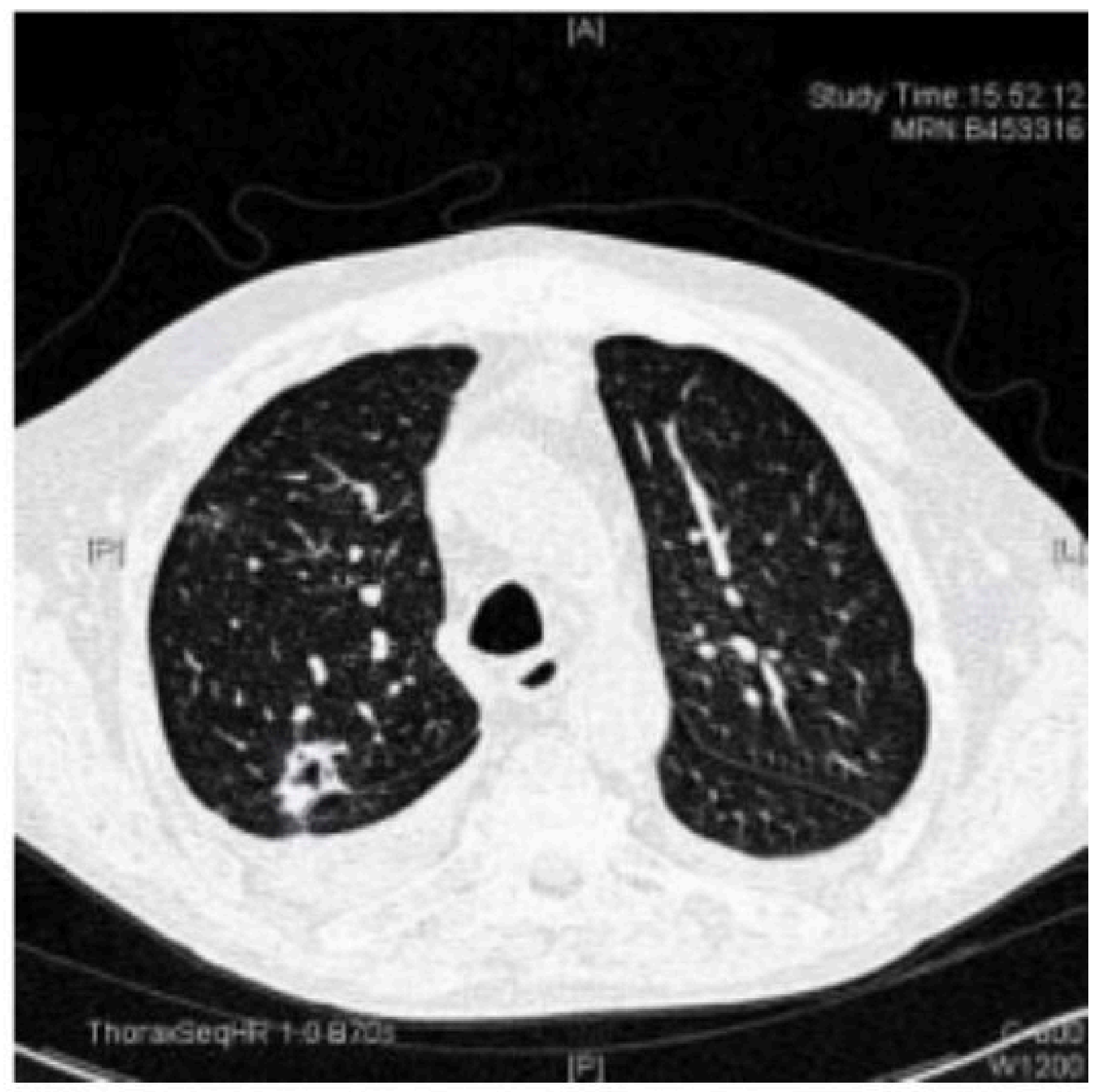
On examination, he had a purpuric rash on his feet. His temperature was 37.4°C, his BP was 180/78 mmHg and his oxygen saturation was 92% (94–98) breathing air. He had dullness to percussion at both lung bases.

Investigations:

haemoglobin	106 g/L (130–180)
white cell count	10.8 × 10^9/L (4.0–11.0)
neutrophil count	9.7 × 10^9/L (1.5–7.0)

serum urea	23.6 mmol/L (2.5–7.0)
serum creatinine	248 μmol/L (60–110)
serum CRP	53 mg/L (<10)

CT scan of chest	see image



What is the most likely diagnosis?

A: anti-glomerular basement membrane antibody disease (Goodpasture syndrome) ○

B: bronchial carcinoma ○

C: granulomatosis with polyangiitis ○

D: polyarteritis nodosa ○

E: pulmonary tuberculosis ○

Question 59 ⌄

Next Question

Question 59

No Answer Given

Incorrect

A 61-year-old man was admitted with a 2-month history of progressive dyspnoea, recurrent haemoptysis, rhinorrhoea, and several episodes of epigastric pain. His medical history included coronary artery bypass grafting following a myocardial infarction with severe left ventricular failure.

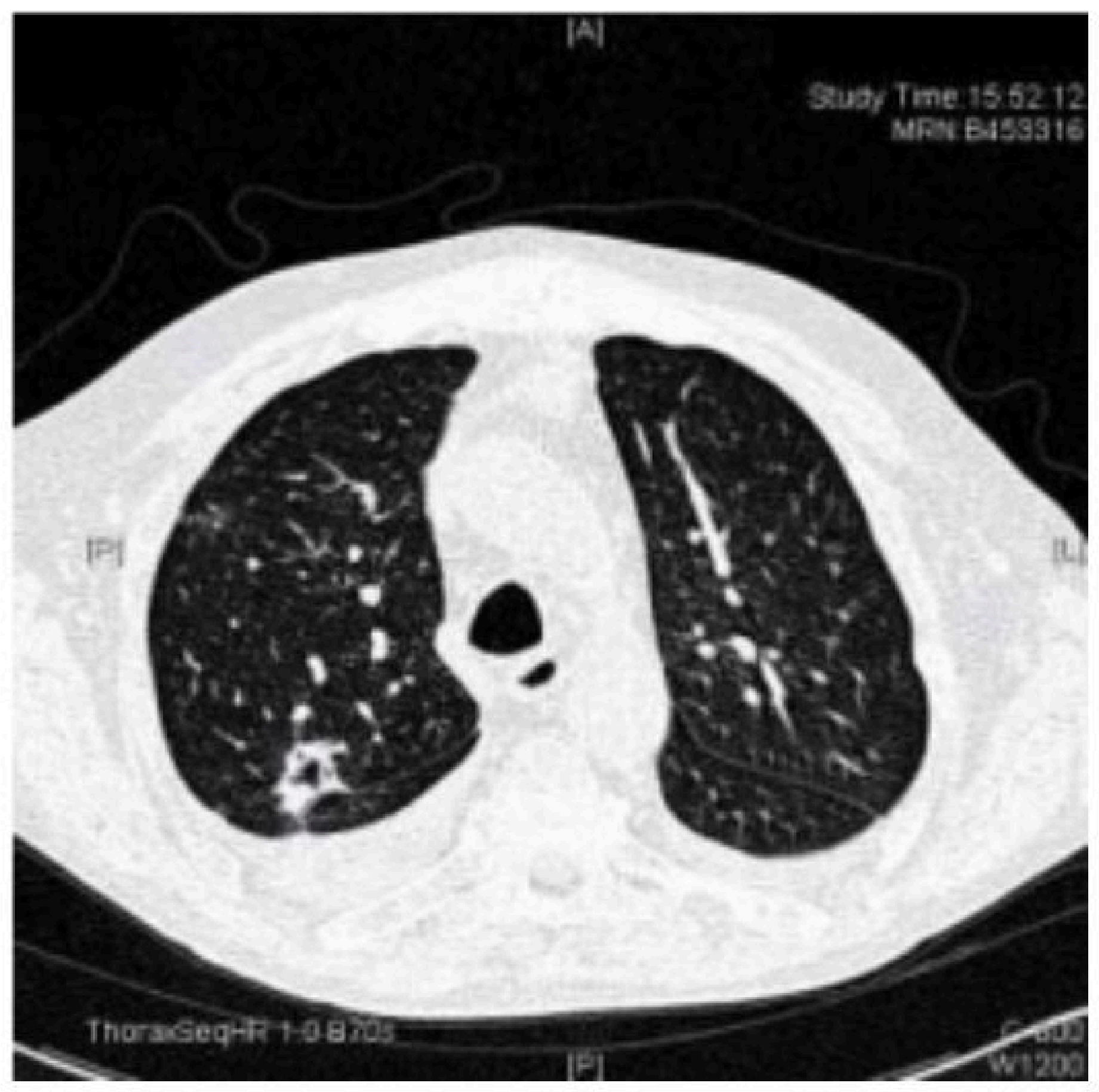
On examination, he had a purpuric rash on his feet. His temperature was 37.4°C, his BP was 180/78 mmHg and his oxygen saturation was 92% (94–98) breathing air. He had dullness to percussion at both lung bases.

Investigations:

haemoglobin	106 g/L (130–180)
white cell count	10.8 × 10^9/L (4.0–11.0)
neutrophil count	9.7 × 10^9/L (1.5–7.0)

serum urea	23.6 mmol/L (2.5–7.0)
serum creatinine	248 µmol/L (60–110)
serum CRP	53 mg/L (<10)

CT scan of chest	see image



What is the most likely diagnosis?

Answers

A: anti-glomerular basement membrane antibody disease (Goodpasture syndrome)
B: bronchial carcinoma
C: granulomatosis with polyangiitis
D: polyarteritis nodosa
E: pulmonary tuberculosis

Correct answer: C

Explanation

(69%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The combination of nasal symptoms, haemoptysis, a purpuric rash, renal failure and a cavitating lesion on the CT scan are most consistent with granulomatosis with polyangiitis.

A bronchial carcinoma is less likely in this clinical context. Tuberculosis would tend to produce multiple cavitating lesions (usually apically). Goodpasture syndrome produces lung haemorrhage in association with renal failure and classically gives a ground-glass appearance on CT scan of chest. Polyarteritis nodosa is possible but less likely than granulomatosis with polyangiitis in this clinical scenario and it usually produces livedo reticularis rather than purpura.

Question 60

A 67-year-old woman presented with history of speech changes and difficulty manipulating food in her mouth. She was unsure how long this had been present. She had gradually become deaf in her right ear over the past 10 years.

Examination showed a right conductive deafness, a right palatal palsy, dysphonia, a non-explosive (bovine) cough and wasting of the right side of her tongue.

What is the most likely diagnosis?

A: acoustic neuroma ○

B: cholesteatoma ○

C: fourth ventricle ependymoma ○

D: glomus jugulare tumour ○

E: nasopharyngeal carcinoma ○

Question 60

Next Question

Question 60

No Answer Given

Incorrect

A 67-year-old woman presented with history of speech changes and difficulty manipulating food in her mouth. She was unsure how long this had been present. She had gradually become deaf in her right ear over the past 10 years.

Examination showed a right conductive deafness, a right palatal palsy, dysphonia, a non-explosive (bovine) cough and wasting of the right side of her tongue.

What is the most likely diagnosis?

Answers

A: acoustic neuroma
B: cholesteatoma
C: fourth ventricle ependymoma
D: glomus jugulare tumour
E: nasopharyngeal carcinoma

Correct answer: D

Explanation

(59%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A glomus jugulare tumour typically has an insidious onset over years of unilateral lower cranial nerve involvement. Nasopharyngeal carcinoma would be extensive and symptomatic (face pain from bony destruction) by the time it involved the cranial nerves IX, X and XII where they exit the skull. A fourth ventricle ependymoma would be associated with other CNS signs, and a cholesteatoma would have a history of chronic suppurative otitis media and need to be extensive to affect the lower cranial nerves as they exit the base of the skull.

An acoustic neuronoma of the size required to extend caudally to the exiting foraminae of cranial nerves IX, X and XII should, by now, have affected cerebellar function. This leaves a glomus jugulare tumour as the most likely explanation for this presentation.

Question 61

A 73-year-old retired man was admitted after he had been found to have renal impairment by his general practitioner. He gave a 3-month history of lethargy and back pain, with thirst and constipation over the past 4 weeks. He had noticed that he had passed less urine than usual in the past 3 days.

Abdominal examination was normal.

Investigations:

haemoglobin	98 g/L (130–180)
white cell count	5.6 × 10^9/L (4.0–11.0)
platelet count	380 × 10^9/L (150–400)
ESR	115 mm/1st h (<20)
serum urea	36.3 mmol/L (2.5–7.0)
serum creatinine	651 µmol/L (60–110)
serum corrected calcium	2.92 mmol/L (2.20–2.60)
serum total protein	85 g/L (61–76)
serum albumin	34 g/L (37–49)
serum alkaline phosphatase	99 U/L (45–105)

What is the most likely diagnosis?

A: carcinoma of prostate ○

B: multiple myeloma ○

C: primary hyperparathyroidism ○

D: sarcoidosis ○

E: tuberculosis ○

Question 61

No Answer Given

Incorrect

A 73-year-old retired man was admitted after he had been found to have renal impairment by his general practitioner. He gave a 3-month history of lethargy and back pain, with thirst and constipation over the past 4 weeks. He had noticed that he had passed less urine than usual in the past 3 days.

Abdominal examination was normal.

Investigations:

haemoglobin	98 g/L (130–180)
white cell count	5.6×10^9/L (4.0–11.0)
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ESR	115 mm/1st h (<20)
serum urea	36.3 mmol/L (2.5–7.0)
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serum corrected calcium	2.92 mmol/L (2.20–2.60)
serum total protein	85 g/L (61–76)
serum albumin	34 g/L (37–49)
serum alkaline phosphatase	99 U/L (45–105)

What is the most likely diagnosis?

Answers

A: carcinoma of prostate
B: multiple myeloma
C: primary hyperparathyroidism
D: sarcoidosis
E: tuberculosis

Correct answer: B

Explanation

(96%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has severe renal failure with hypercalcaemia and high serum globulins (high serum total protein, low serum albumin). He is also anaemic and has a very high ESR. These features are highly suggestive of multiple myeloma, and the history of diminished urine output probably indicates development or progression of cast nephropathy.

Carcinoma of prostate with bone metastases and primary hyperparathyroidism may cause hypercalcaemia but usually not high serum globulins, and this level of hypercalcaemia alone is unlikely to cause severe renal failure. The normal serum alkaline phosphatase also makes these conditions less likely. Sarcoidosis may cause hypercalcaemia, high serum globulins, renal failure anaemia and a high ESR but it is much less common than multiple myeloma in this age group. Tuberculosis rarely causes hypercalcaemia or renal failure.

Question 62

A 66-year-old woman with metastatic colon cancer and ascites developed decreased appetite, continuous nausea and feelings of early satiety.

Examination showed a small volume of ascites and a succussion splash. There was no hepatomegaly, and there were no abdominal masses palpable.

Investigations:

upper gastrointestinal endoscopy	no obstruction at gastric pylorus

What is the most appropriate treatment to relieve her symptoms?

A: oral dexamethasone ○

B: oral metoclopramide ○

C: oral morphine ○

D: subcutaneous cyclizine ○

E: subcutaneous levomepromazine ○

Question 62

No Answer Given

Incorrect

A 66-year-old woman with metastatic colon cancer and ascites developed decreased appetite, continuous nausea and feelings of early satiety.

Examination showed a small volume of ascites and a succussion splash. There was no hepatomegaly, and there were no abdominal masses palpable.

Investigations:

upper gastrointestinal endoscopy	no obstruction at gastric pylorus

What is the most appropriate treatment to relieve her symptoms?

Answers

A: oral dexamethasone
B: oral metoclopramide
C: oral morphine
D: subcutaneous cyclizine
E: subcutaneous levomepromazine

Correct answer: B

Explanation

(49%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A succussion splash suggests delayed gastric emptying and the endoscopy findings suggest that this is due to gastroparesis rather than gastric outlet obstruction.

Of the three antiemetics offered, only metoclopramide has prokinetic effects, and so this would be the first choice. Although corticosteroids may help all these symptoms, the risk of cumulative adverse effects would mean that this would not be the first choice of treatment without trying antiemetics first.

Question 63

A 55-year-old man was referred to the outpatient clinic having been found to have microcytosis at a ‘well-man’ screen. Currently, he had no gastrointestinal symptoms but one year previously, he had presented with heartburn and bloating. At that time, an upper gastrointestinal endoscopy and duodenal biopsy were normal and his symptoms responded to omeprazole.

Abdominal examination and digital examination of the rectum were normal.

Investigations:

haemoglobin	132 g/L (130–180)
MCV	76 fL (80–96)
MCH	27 pg (28–32)
white cell count	3.6 × 10^9/L (4.0–11.0)
platelet count	64 × 10^9 /L (150–400)
serum ferritin	15 μg/L (15–300)

What is the most appropriate next management step?

- A: colonoscopy ○
- B: CT colonography ○
- C: faecal occult blood testing ○
- D: MR scan of small bowel ○
- E: video capsule enteroscopy ○

Question 63

No Answer Given

Incorrect

A 55-year-old man was referred to the outpatient clinic having been found to have microcytosis at a 'well-man' screen. Currently, he had no gastrointestinal symptoms but one year previously, he had presented with heartburn and bloating. At that time, an upper gastrointestinal endoscopy and duodenal biopsy were normal and his symptoms responded to omeprazole.

Abdominal examination and digital examination of the rectum were normal.

Investigations:

haemoglobin	132 g/L (130–180)
MCV	76 fL (80–96)
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white cell count	3.6 × 10^9/L (4.0–11.0)
platelet count	64 × 10^9 /L (150–400)
serum ferritin	15 µg/L (15–300)

What is the most appropriate next management step?

Answers

A: colonoscopy
B: CT colonography
C: faecal occult blood testing
D: MR scan of small bowel
E: video capsule enteroscopy

Correct answer: A

Explanation

(33%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The presence of microcytosis suggests iron deficiency and with the given full blood count findings, the serum ferritin would be interpreted as consistent with iron deficiency The British Society of Gastroenterology Guidelines (2011) advocate gastrointestinal investigation for iron deficiency (without anaemia) in postmenopausal women and men over the age of 50. A colonoscopy is the investigation of choice here as it has the greatest sensitivity for detecting polyps,carcinomas and vascular lesions. Normally endoscopic examination of the upper gastrointestinal tract would also be indicated; in this case a gastroscopy was performed recently enough. Small intestinal lesions are a less common cause of iron deficiency than colonic causes and usually small bowel investigations are performed after colonic imaging, in those with recurrent anaemia. Faecal occult blood testing would not add anything as it is not particularly sensitive or specific.

Question 64

A 56-year-old man was referred to the medical clinic from the psychiatric unit because of weight gain of 20 kg over 4 months. He had a 6-month history of severe depression with psychosis, which had required inpatient treatment. He was taking olanzapine 20 mg daily and fluoxetine 40 mg daily.

On examination, he appeared cushingoid, with central obesity and a few abdominal striae. He had reasonable proximal muscle strength. His BP was 170/100 mmHg.

Investigations:

fasting plasma glucose	8.5 mmol/L (3.0–6.0)
serum cholesterol	6.4 mmol/L (<5.2)
serum non-HDL cholesterol	5.01 mmol/L (<3.36)
serum HDL cholesterol	0.75 mmol/L (>1.55)
fasting serum triglycerides	2.42 mmol/L (0.45–2.30)

overnight dexamethasone suppression test (1 mg):	
serum cortisol	55 nmol/L (<50)
24-h urinary free cortisol	310 nmol (55–250)

What is the most likely diagnosis?

- A: adrenal Cushing’s syndrome ○
- B: ectopic adrenocorticotropic hormone syndrome ○
- C: metabolic syndrome ○
- D: pituitary-dependent Cushing’s disease ○
- E: pseudo-Cushing’s syndrome ○

Question 64

No Answer Given

Incorrect

A 56-year-old man was referred to the medical clinic from the psychiatric unit because of weight gain of 20 kg over 4 months. He had a 6-month history of severe depression with psychosis, which had required inpatient treatment. He was taking olanzapine 20 mg daily and fluoxetine 40 mg daily.

On examination, he appeared cushingoid, with central obesity and a few abdominal striae. He had reasonable proximal muscle strength. His BP was 170/100 mmHg.

Investigations:

fasting plasma glucose	8.5 mmol/L (3.0–6.0)
serum cholesterol	6.4 mmol/L (<5.2)
serum non-HDL cholesterol	5.01 mmol/L (<3.36)
serum HDL cholesterol	0.75 mmol/L (>1.55)
fasting serum triglycerides	2.42 mmol/L (0.45–2.30)
overnight dexamethasone suppression test (1 mg):	
serum cortisol	55 nmol/L (<50)
24-h urinary free cortisol	310 nmol (55–250)

What is the most likely diagnosis?

Answers

A: adrenal Cushing’s syndrome
B: ectopic adrenocorticotropic hormone syndrome
C: metabolic syndrome
D: pituitary-dependent Cushing’s disease
E: pseudo-Cushing’s syndrome

Correct answer: E

Explanation

(36%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has many features of Cushing’s syndrome but few specific features (proximal myopathy, easy bruising, thin skin). This is on a background of severe depression. Depression is a common feature of Cushing’s but is usually more agitated than psychotic in type. The almost complete suppression of serum cortisol by low-dose dexamethasone confirms only mild hypercortisolism and excludes both adrenal Cushing’s and ectopic adrenocorticotropic hormone syndrome. Around 8% of patients with proven pituitary Cushing’s disease will suppress serum cortisol with a low-dose suppression test, but the minimally elevated urinary cortisol makes this diagnosis less likely (levels should be >3 times normal for definitive diagnosis). There is considerable overlap between the appearances of Cushing’s and the metabolic syndrome but the history of depression and the investigation results make pseudo-Cushing’s the most likely diagnosis.

Question 65

A 22-year-old man was admitted with pleuritic chest pain and swelling of both legs, worse on the right.

Doppler ultrasonography showed a right femoropopliteal thrombosis, and lung perfusion scans showed a right basal perfusion defect with a high probability of a pulmonary embolus. He was not cyanosed or haemodynamically unstable and treatment was started with enoxaparin and warfarin.

Further investigations:

serum creatinine	90 μmol/L (60–110)
serum total protein	53 g/L (61–76)
serum albumin	15 g/L (37–49)
serum cholesterol	7.0 mmol/L (<5.2)
urinary protein:creatinine ratio	940 mg/mmol (<30)

An ultrasound scan of kidneys was normal. A renal biopsy could not be performed, as the patient was anticoagulated. He was treated with corticosteroids, and 1 week later the urinary protein:creatinine ratio was 130 mg/mmol.

What is the most likely renal diagnosis?

A: antiphospholipid antibody syndrome ○

B: focal segmental glomerulosclerosis ○

C: membranous nephropathy ○

D: minimal change nephropathy ○

E: renal vein thrombosis ○

Question 65 ⌄

Next Question

Question 65

No Answer Given

Incorrect

A 22-year-old man was admitted with pleuritic chest pain and swelling of both legs, worse on the right.

Doppler ultrasonography showed a right femoropopliteal thrombosis, and lung perfusion scans showed a right basal perfusion defect with a high probability of a pulmonary embolus. He was not cyanosed or haemodynamically unstable and treatment was started with enoxaparin and warfarin.

Further investigations:

serum creatinine	90 μmol/L (60–110)
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serum cholesterol	7.0 mmol/L (<5.2)
urinary protein:creatinine ratio	940 mg/mmol (<30)

An ultrasound scan of kidneys was normal. A renal biopsy could not be performed, as the patient was anticoagulated. He was treated with corticosteroids, and 1 week later the urinary protein:creatinine ratio was 130 mg/mmol.

What is the most likely renal diagnosis?

Answers

A: antiphospholipid antibody syndrome
B: focal segmental glomerulosclerosis
C: membranous nephropathy
D: minimal change nephropathy
E: renal vein thrombosis

Correct answer: D

Explanation

(70%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

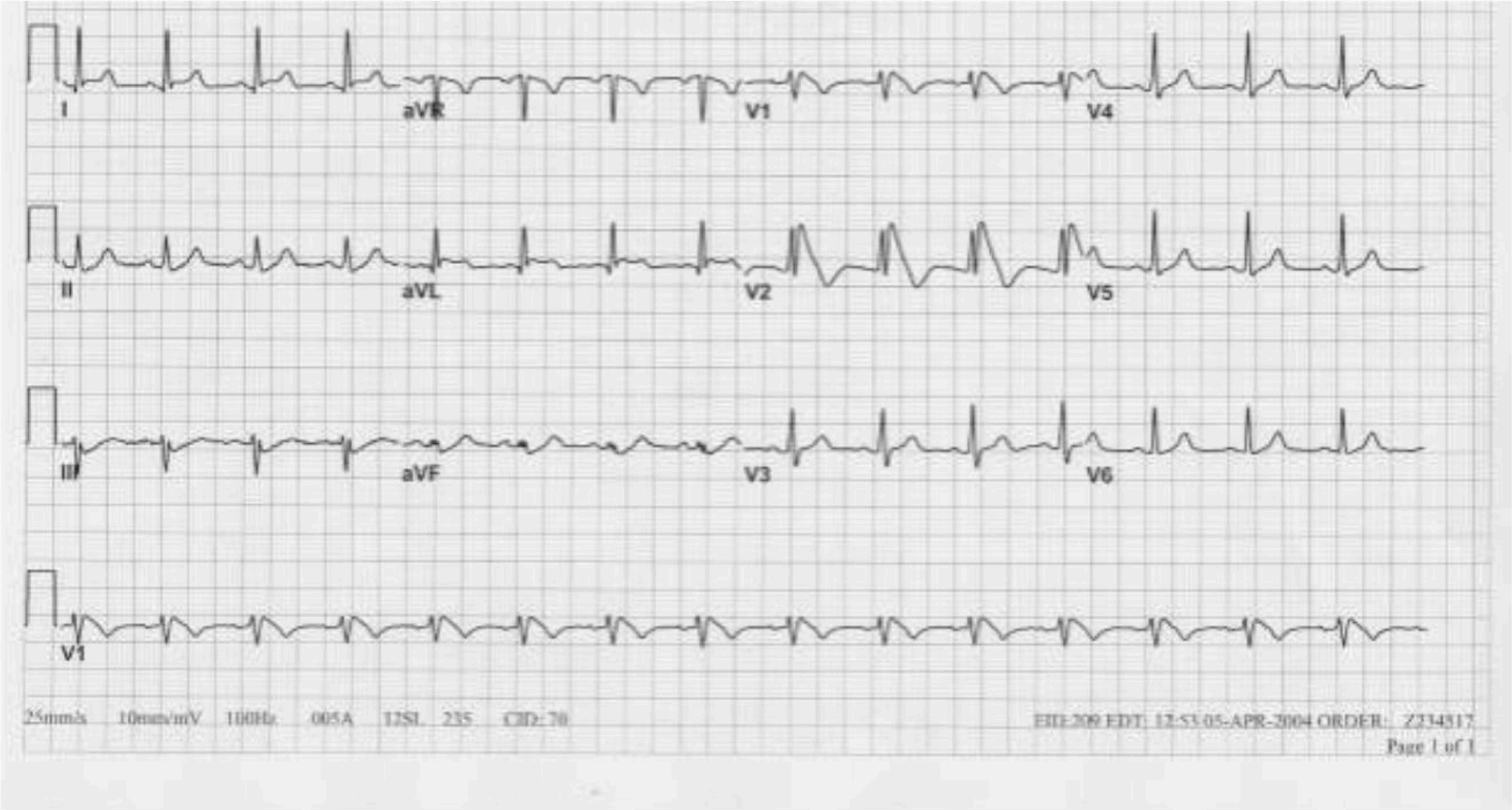
This young man has nephrotic syndrome complicated by venous thromboembolism. One week of corticosteroid therapy has caused a major reduction in proteinuria and it is likely that he will soon be in complete remission. This very rapid response to corticosteroid is generally only found in minimal change nephropathy.

In this patient, venous thromboembolism is a consequence of the hypercoagulable state associated with nephrotic syndrome and there is no reason to suspect antiphospholipid antibody syndrome. Focal segmental glomerulosclerosis may respond to corticosteroid therapy, but usually only after several months. Membranous nephropathy rarely responds to corticosteroid alone. Renal vein thrombosis is a recognised complication of the nephrotic syndrome but not the primary renal diagnosis.

Question 66

A 26-year-old man was referred for assessment after his brother had died suddenly at the age of 32 years.

An ECG was performed (see image).


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
25mm/s 10mm/mV 100Hz 005A 12SL 235 CID: 70
EID:209 EDT: 12:53 05-APR-2004 ORDER: Z234317
Page 1 of 1

What underlying diagnosis is suggested by the ECG appearances?

- A: arrhythmogenic right ventricular cardiomyopathy ○
- B: Brugada syndrome ○
- C: hypertrophic cardiomyopathy ○
- D: long QT syndrome ○
- E: Wolff–Parkinson–White syndrome ○

Question 66 ⌄

Next Question

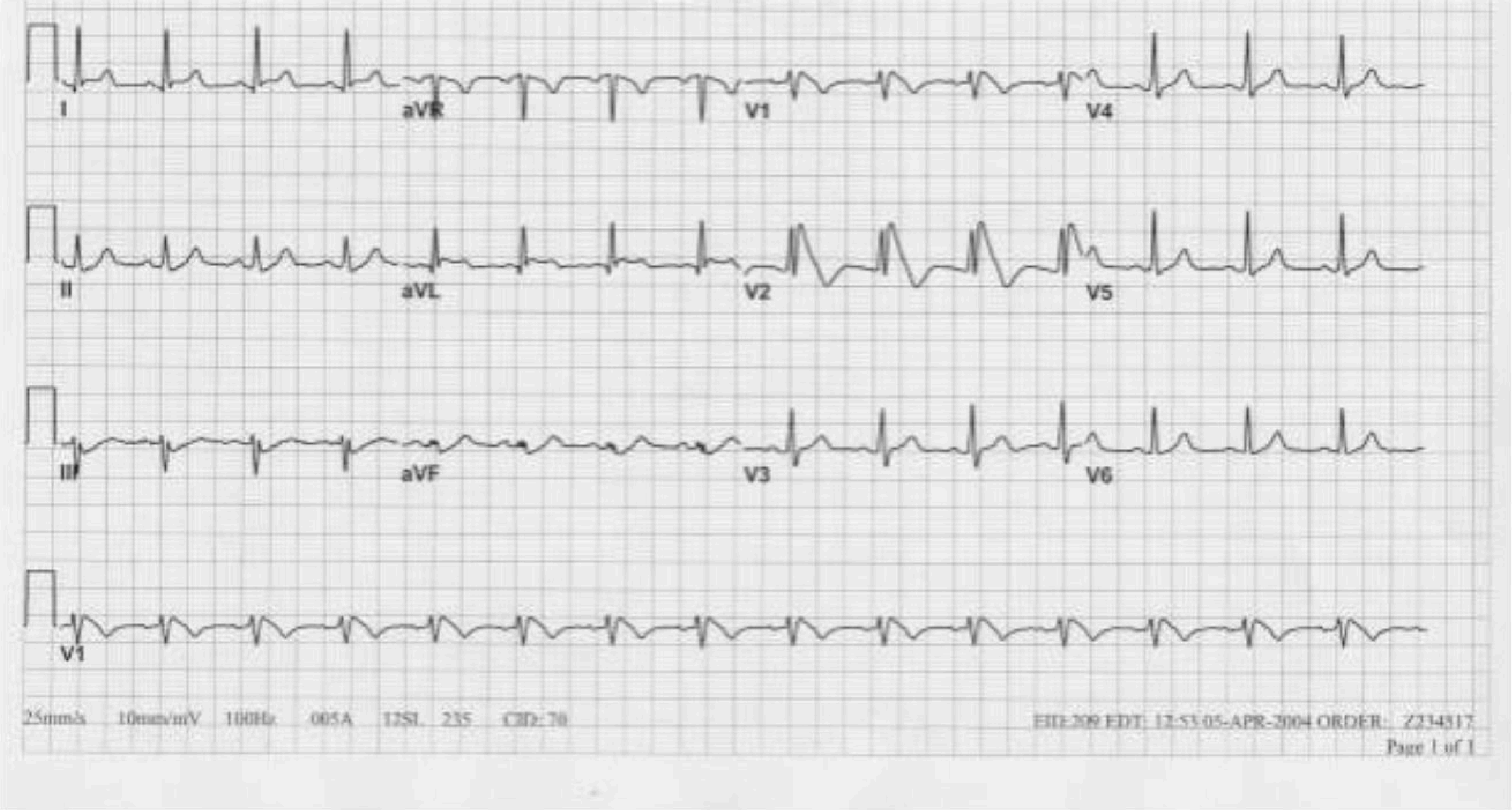
Question 66

No Answer Given

Incorrect

A 26-year-old man was referred for assessment after his brother had died suddenly at the age of 32 years.

An ECG was performed (see image).


I
aVR
V1
V4
II
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V2
V5
III
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V3
V6
V1
25mm/s 10mm/mV 100Hz 005A 12SL 235 CID: 70
EID:209 EDT: 12:53 05-APR-2004 ORDER: Z234317
Page 1 of 1

What underlying diagnosis is suggested by the ECG appearances?

Answers

A: arrhythmogenic right ventricular cardiomyopathy
B: Brugada syndrome
C: hypertrophic cardiomyopathy
D: long QT syndrome
E: Wolff–Parkinson–White syndrome

Correct answer: B

Explanation

(69%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

When there is a family history of sudden cardiac death at a young age it is important to screen siblings for the conditions listed. This ECG shows sinus rhythm with normal PR and QT intervals. The striking abnormality is a partial right bundle branch block pattern with elevation of the ST segment, leading to T-wave inversion in leads V1 and V2. This is characteristic of the Brugada syndrome. There is no evidence of left ventricular hypertrophy.

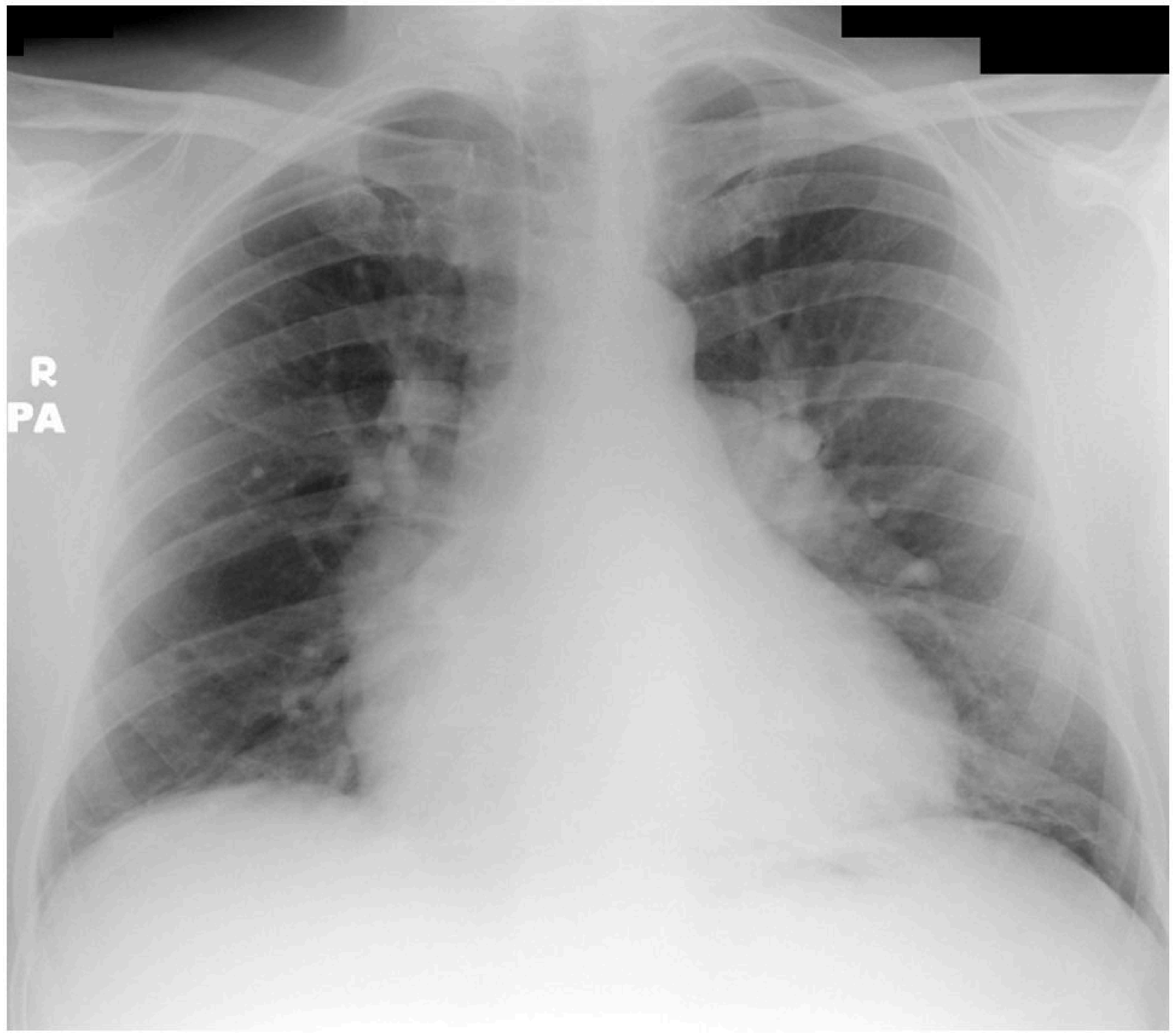
Brugada syndrome is an autosomal dominant condition which is associated with a risk of sudden cardiac death from ventricular arrhythmia. The ECG abnormality is not always apparent and may be revealed by administration of a sodium channel blocking drug such as ajmaline or flecainide. To make the diagnosis there should be at least one additional feature such as a history of syncope, history of ventricular arrhythmia, or a family history of the ECG abnormality, syncope or ventricular arrhythmia.

Question 67

A 55-year-old man was admitted as an emergency after the sudden onset of chest pain while moving furniture. The pain had lasted for a few minutes. One year previously, he had developed fatigue and shortness of breath on moderate exertion. He had also noticed an irregularity of his heartbeat.

Investigations:

serum troponin T	2 ng/L (<14)
ECG	atrial fibrillation; right bundle branch block; no ST segment or T-wave changes
chest X-ray	see image



What is the most likely underlying diagnosis?

- A: atrial septal defect ○
- B: dilated cardiomyopathy ○
- C: Ebstein’s anomaly ○
- D: mitral stenosis ○
- E: pericardial effusion ○

Question 67

Next Question

Question 67

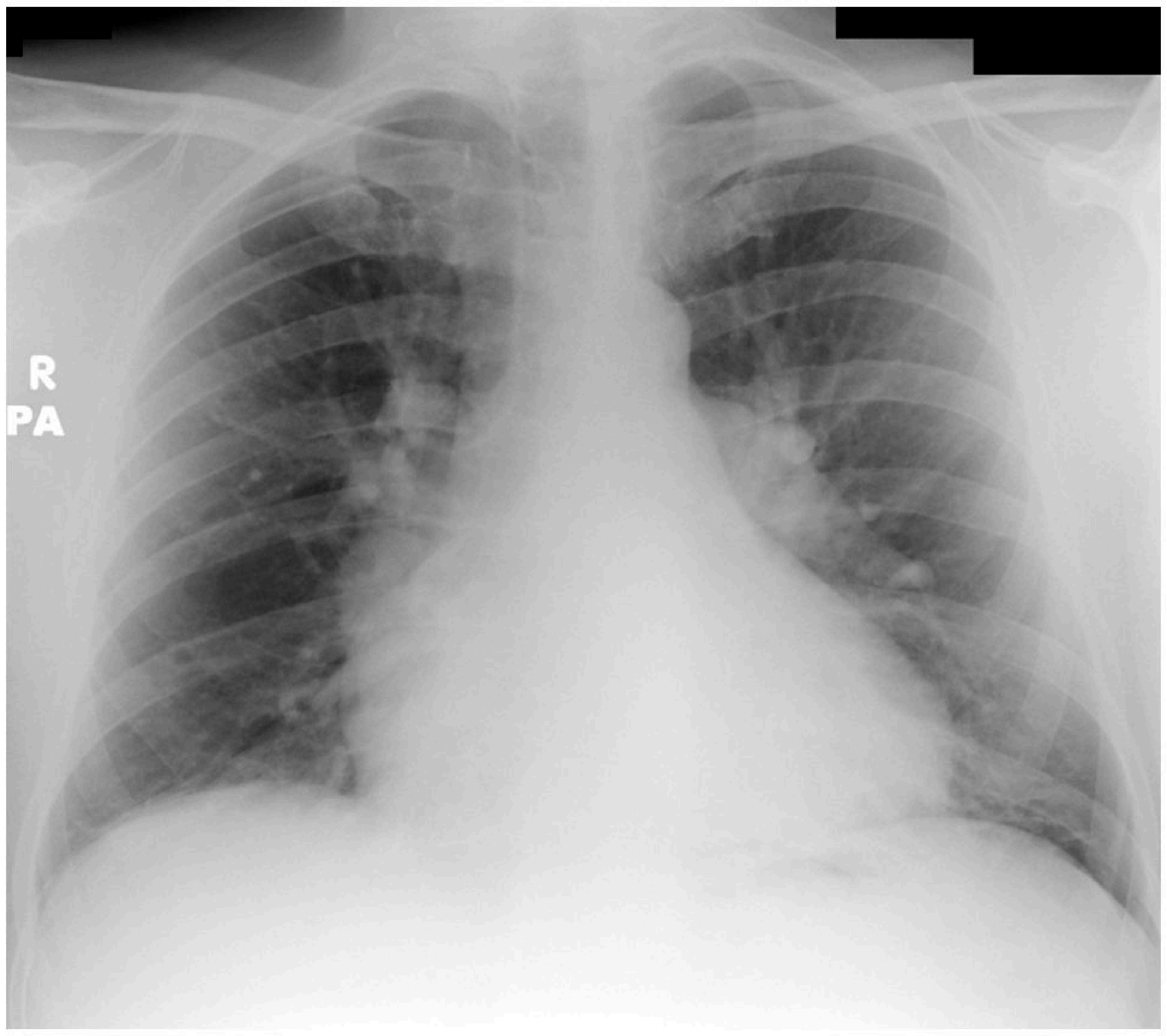
No Answer Given

Incorrect

A 55-year-old man was admitted as an emergency after the sudden onset of chest pain while moving furniture. The pain had lasted for a few minutes. One year previously, he had developed fatigue and shortness of breath on moderate exertion. He had also noticed an irregularity of his heartbeat.

Investigations:

serum troponin T	2 ng/L (<14)
ECG	atrial fibrillation; right bundle branch block; no ST segment or T-wave changes
chest X-ray	see image



What is the most likely underlying diagnosis?

Answers

- A: atrial septal defect
- B: dilated cardiomyopathy
- C: Ebstein’s anomaly
- D: mitral stenosis
- E: pericardial effusion

Correct answer: A

Explanation

(15%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

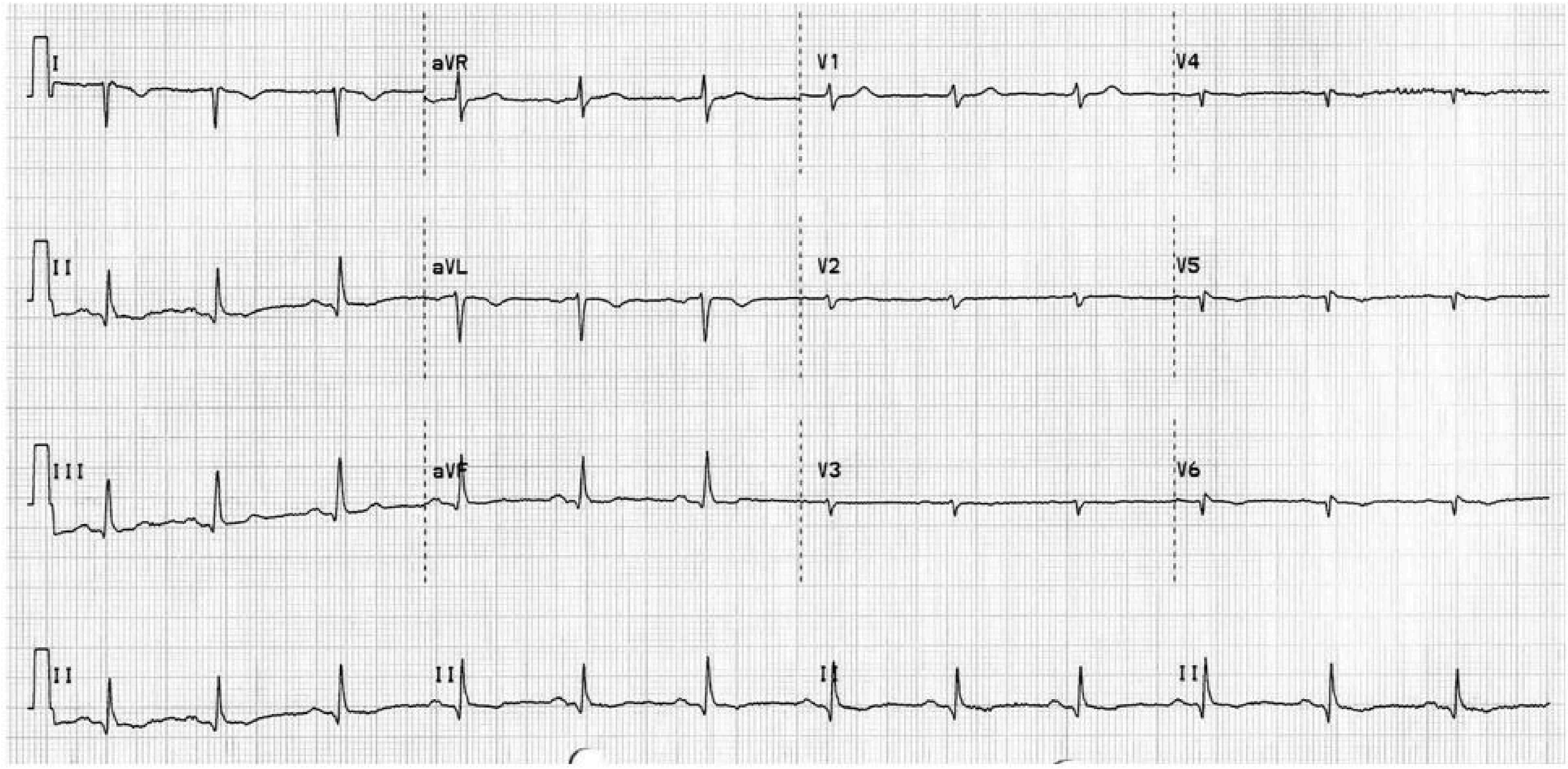
The chest X-ray shows the classical appearances of an atrial septal defect. There is a small aortic knuckle and markedly enlarged main pulmonary arteries with increased pulmonary vascular markings. There is mild cardiomegaly. The small aortic knuckle reflects decreased left heart output secondary to intracardiac left-to-right shunting and gives the left heart border a characteristically straightened appearance and a triangular cardiac and mediastinal silhouette. The cardiomegaly is secondary to right atrial enlargement and the increased pulmonary flow leads to dilated pulmonary arteries.

The presentation of a secundum type atrial septal defect in adulthood and even elderly patients is not uncommon. The most common symptoms are dyspnoea, ankle swelling or palpitation (secondary to atrial arrhythmia). The ECG invariably shows right bundle branch block. The cause of chest pain in this case is unclear. One possibility is right ventricular angina due to the increased demands upon the right side of the heart.

Question 68

A 26-year-old man was referred to the outpatient clinic for the assessment of breathlessness associated with chest discomfort. He had asthma and was a non-smoker. There was no family history of cardiac disease.

On examination, his pulse was 80 beats per minute and regular, and his BP was 110/70 mmHg. His chest was hyperinflated and, on auscultation, he was found to have bilateral inspiratory and expiratory wheezing. His heart sounds were difficult to hear. A 12-lead ECG was performed (see image).



What is the most likely diagnosis?

- A: dextrocardia ○
- B: hypothyroidism ○
- C: left-sided pneumothorax ○
- D: pericardial effusion ○
- E: pulmonary hypertension ○

Question 68 ⌄

Next Question

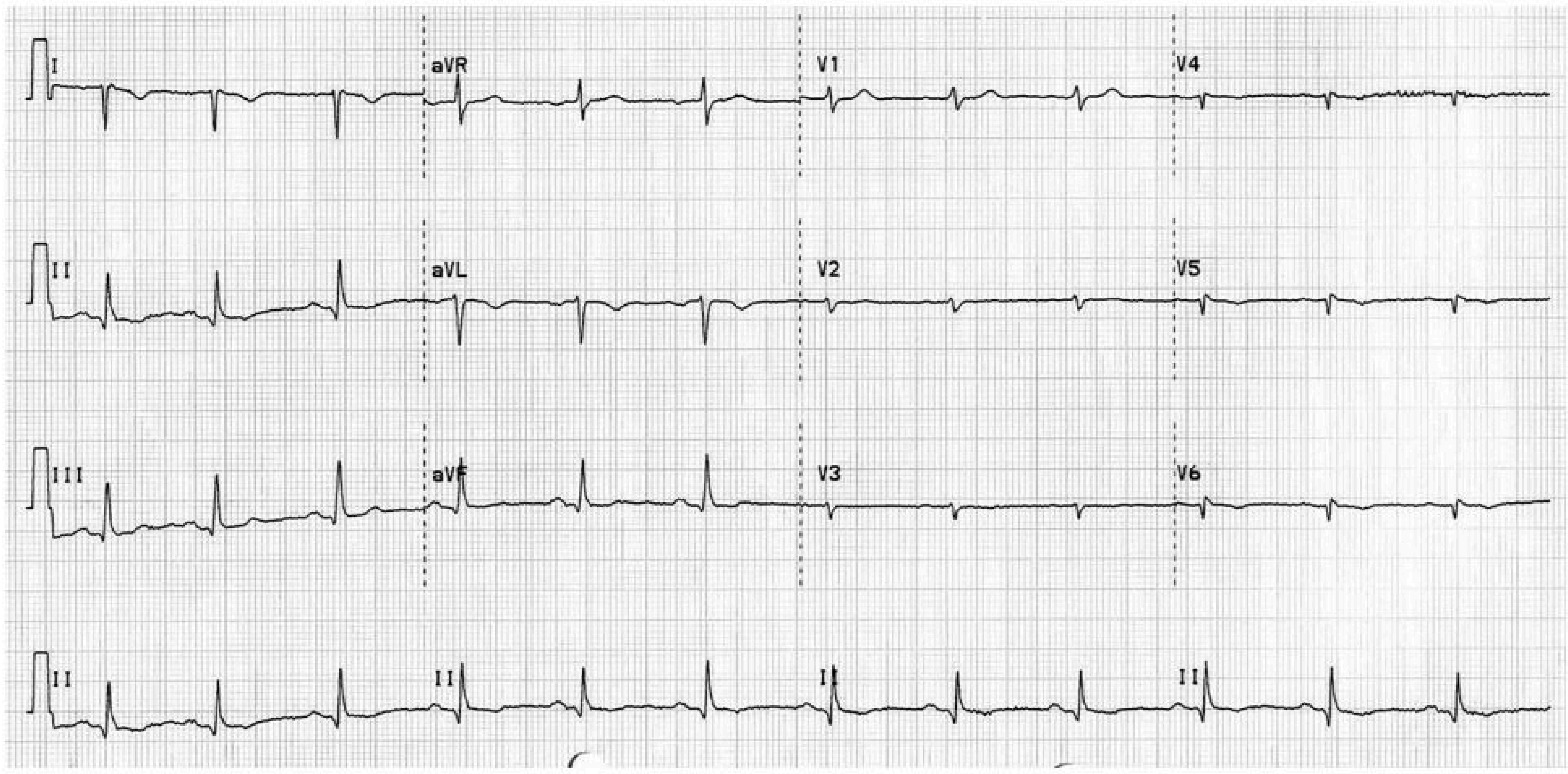
Question 68

No Answer Given

Incorrect

A 26-year-old man was referred to the outpatient clinic for the assessment of breathlessness associated with chest discomfort. He had asthma and was a non-smoker. There was no family history of cardiac disease.

On examination, his pulse was 80 beats per minute and regular, and his BP was 110/70 mmHg. His chest was hyperinflated and, on auscultation, he was found to have bilateral inspiratory and expiratory wheezing. His heart sounds were difficult to hear. A 12-lead ECG was performed (see image).



What is the most likely diagnosis?

Answers

A: dextrocardia
B: hypothyroidism
C: left-sided pneumothorax
D: pericardial effusion
E: pulmonary hypertension

Correct answer: A

Explanation

(62%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The ECG shows a number of unusual features. There are negative QRST complexes in lead I and aVL that look like inversions of the normal morphology for those leads. The QRS complex in aVR is isoelectric (usually it is clearly negative). This combination is most commonly due to the operator mistakenly transposing the limb lead when taking the recording; however, the QRST complexes in the chest leads would be normal under those circumstances. Here the QRTS complexes in the (left-sided) chest leads are very small despite normal- sized complexes in the limb leads. This suggests that the bulk of the cardiac muscle is not on the left side of the chest. The combination suggests mirror-image dextrocardia.

Question 69

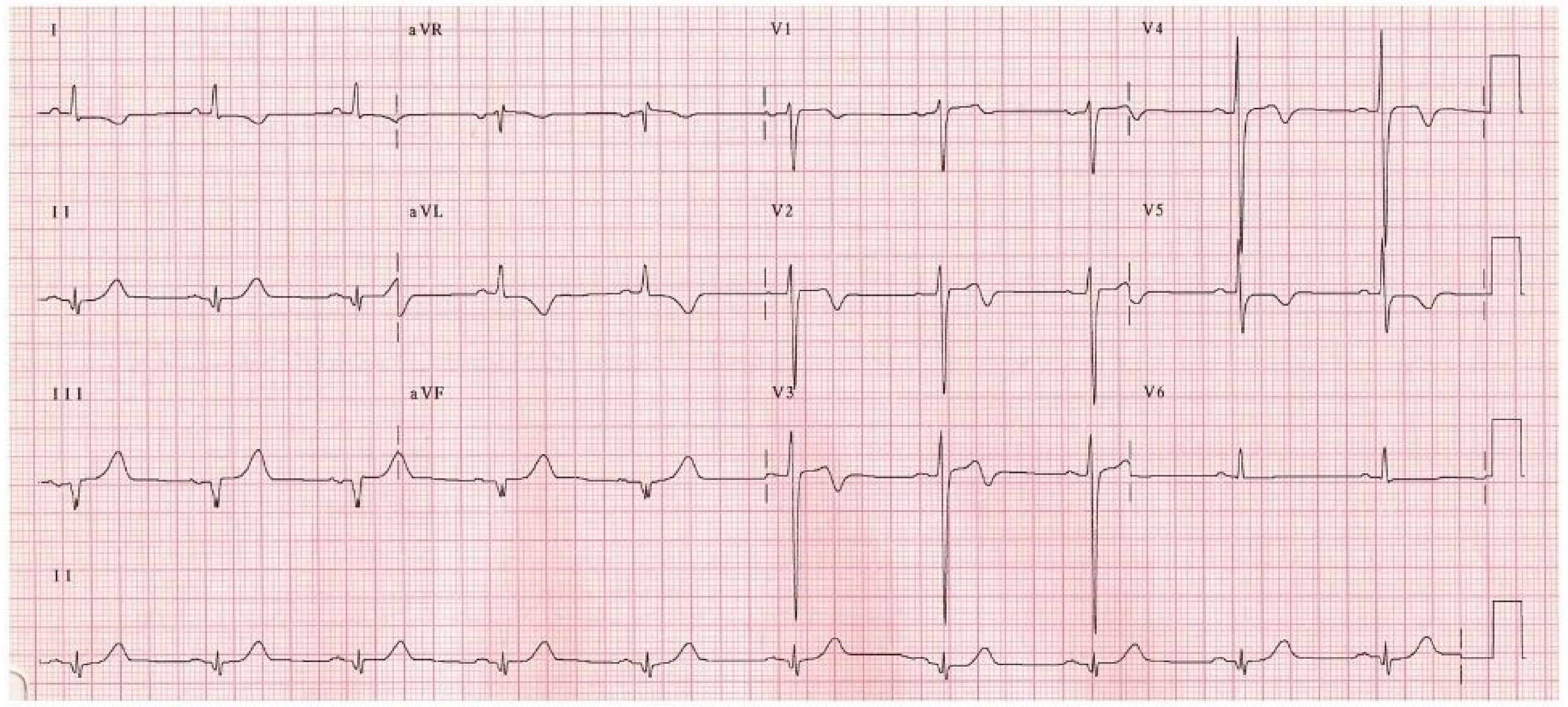
A 26-year-old man presented with non-specific left-sided chest pain. He usually exercised for 30 minutes every day. He smoked 5 cigarettes per day. Both of his parents had developed angina in their sixties.

On examination, his pulse was 60 beats per minute and regular, and all of his peripheral pulses were palpable. His BP was 140/90 mmHg. His heart sounds were normal but there was a systolic murmur at the left sternal edge. His chest was clear.

Investigations:

serum cholesterol	6.2 mmol/L (<5.2)
serum non-HDL cholesterol	3.90 mmol/L (<3.36)

A 12-lead ECG was performed (see image).



What is the most likely underlying diagnosis?

A: anterior non-ST-elevation myocardial infarction ○

B: aortic stenosis ○

C: hypertrophic cardiomyopathy ○

D: old inferior myocardial infarction ○

E: ventricular septal defect ○

Question 69 ⌄

Next Question

Question 69

No Answer Given

Incorrect

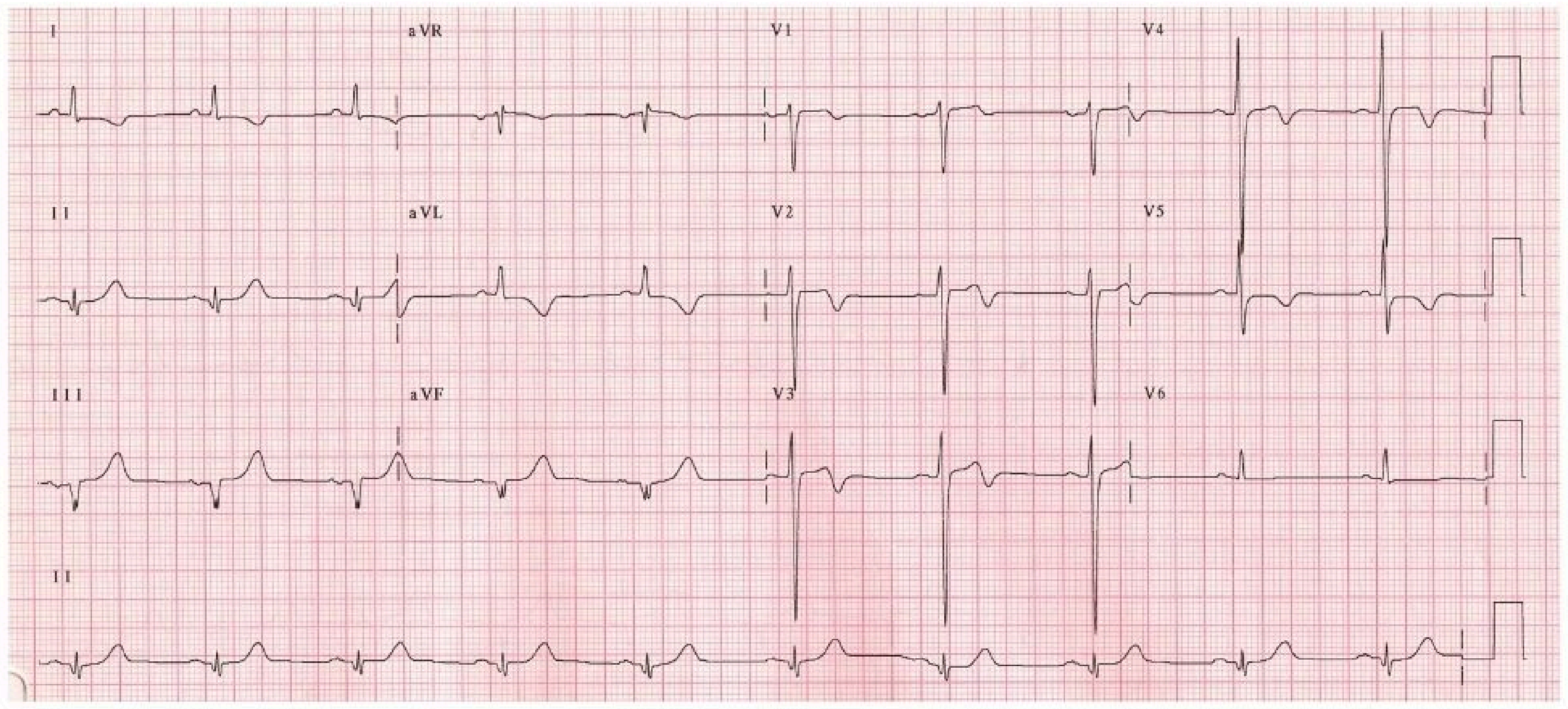
A 26-year-old man presented with non-specific left-sided chest pain. He usually exercised for 30 minutes every day. He smoked 5 cigarettes per day. Both of his parents had developed angina in their sixties.

On examination, his pulse was 60 beats per minute and regular, and all of his peripheral pulses were palpable. His BP was 140/90 mmHg. His heart sounds were normal but there was a systolic murmur at the left sternal edge. His chest was clear.

Investigations:

serum cholesterol	6.2 mmol/L (<5.2)
serum non-HDL cholesterol	3.90 mmol/L (<3.36)

A 12-lead ECG was performed (see image).



What is the most likely underlying diagnosis?

Answers

A: anterior non-ST-elevation myocardial infarction
B: aortic stenosis
C: hypertrophic cardiomyopathy
D: old inferior myocardial infarction
E: ventricular septal defect

Correct answer: C

Explanation

(54%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The ECG shows a sinus bradycardia with a QRS axis of –15 degrees. There are inferior Q waves and marked T-wave inversion in leads I, aVL, V_2–V_5. The precordial complexes suggest left ventricular hypertrophy (LVH) (26-mm R wave in V_3). P-wave morphology is within normal limits. The inferior Q waves reflect prolonged depolarisation of the hypertrophied interventricular septum. At this age, the most likely explanation is of hypertrophic cardiomyopathy but the patient requires further investigation by echocardiography. The degree of repolarisation abnormality is not typical for LVH secondary to aortic stenosis, ischaemic heart disease is very unlikely, and ventricular septal defect does not cause LVH.

Question 70

A 68-year-old man was being treated for advanced cardiac failure due to a dilated cardiomyopathy caused by a previous viral infection. He was taking ramipril, bisoprolol and furosemide.

Investigations:

echocardiogram	dilated left ventricle with globally poor systolic function; ejection fraction 30%

What additional drug is most likely to improve the prognosis?

A: amlodipine ○

B: bendroflumethiazide ○

C: digoxin ○

D: isosorbide mononitrate ○

E: spironolactone ○

Question 70

No Answer Given

Incorrect

A 68-year-old man was being treated for advanced cardiac failure due to a dilated cardiomyopathy caused by a previous viral infection. He was taking ramipril, bisoprolol and furosemide.

Investigations:

echocardiogram	dilated left ventricle with globally poor systolic function; ejection fraction 30%

What additional drug is most likely to improve the prognosis?

Answers

A: amlodipine
B: bendroflumethiazide
C: digoxin
D: isosorbide mononitrate
E: spironolactone

Correct answer: E

Explanation

(93%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The RALES study demonstrated a substantially reduced mortality from the addition of spironolactone to patients with heart failure (LV ejection fraction <35%) on otherwise ‘optimal’ treatment. In heart failure, amlodipine can be used safely to treat hypertension, digoxin may offer symptomatic benefit in patients on ‘optimal’ treatment, bendroflumethiazide can have a synergistic effect with loop diuretics for resistant fluid retention and isosorbide mononitrate can provide symptom relief from angina and breathlessness; however, none of these has been shown to offer prognostic (mortality) benefit.

Question 71

A 74-year-old man was admitted with a 4-month history of generalised arthralgia, fatigue and weight loss. He had completed a 5-day course of antibiotics for a presumed urinary tract infection 2 days previously.

On examination, his temperature was 37.7°C, his pulse was 80 beats per minute and his BP was 140/50 mmHg. A grade 2 early diastolic murmur was heard over the left sternal edge. He had no clinical evidence of arthropathy and examination was otherwise normal. Urinalysis showed blood 2+.

Investigations:

haemoglobin	107 g/L (130–180)
white cell count	11.5 × 10^9/L (4.0–11.0)
ESR	94 mm/1st h (<20)
blood culture	no growth after 48 h
urinary culture	no growth
12-lead ECG	normal
chest X-ray	normal
transthoracic echocardiogram	thickened aortic valve leaflets and moderate aortic regurgitation

The first available appointment for a transoesophageal echocardiogram was in 2 days' time.

What is the most appropriate action?

A: blood cultures for fungi ○

B: coxiella serology ○

C: intravenous benzylpenicillin and gentamicin ○

D: intravenous vancomycin and gentamicin ○

E: repeat blood cultures ○

Question 71

Next Question

Question 71

No Answer Given

Incorrect

A 74-year-old man was admitted with a 4-month history of generalised arthralgia, fatigue and weight loss. He had completed a 5-day course of antibiotics for a presumed urinary tract infection 2 days previously.

On examination, his temperature was 37.7°C, his pulse was 80 beats per minute and his BP was 140/50 mmHg. A grade 2 early diastolic murmur was heard over the left sternal edge. He had no clinical evidence of arthropathy and examination was otherwise normal. Urinalysis showed blood 2+.

Investigations:

haemoglobin	107 g/L (130–180)
white cell count	11.5 × 10^9/L (4.0–11.0)
ESR	94 mm/1st h (<20)
blood culture	no growth after 48 h
urinary culture	no growth
12-lead ECG	normal
chest X-ray	normal
transthoracic echocardiogram	thickened aortic valve leaflets and moderate aortic regurgitation

The first available appointment for a transoesophageal echocardiogram was in 2 days' time.

What is the most appropriate action?

Answers

A: blood cultures for fungi
B: coxiella serology
C: intravenous benzylpenicillin and gentamicin
D: intravenous vancomycin and gentamicin
E: repeat blood cultures

Correct answer: E

Explanation

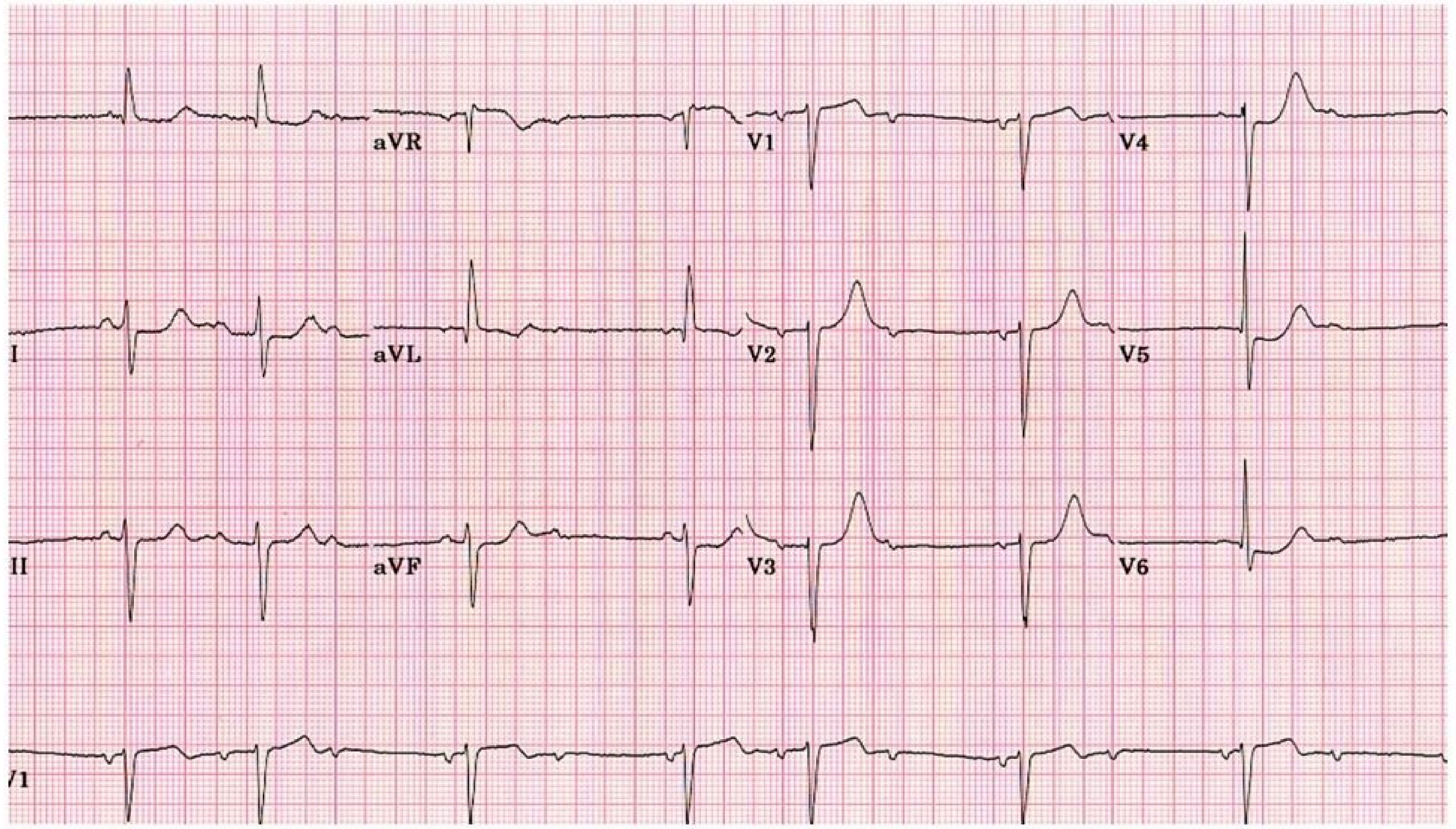
(32%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The clinical presentation is very suggestive of infective endocarditis. However, the recent course of antibiotics for presumed urinary tract infection, which finished only 2 days previously, is the most likely cause for negative blood cultures at 48 h. The success of medical treatment for infective endocarditis is critically dependent upon identification of the infecting organism and its sensitivity to antimicrobials. For this reason, at least 3 further blood cultures should be taken before starting intravenous antibiotics. Fungal infection or Q fever are very much less likely than bacterial infection.

Question 72

A 49-year-old man was referred by his general practitioner after he had noticed that his pulse was irregular. He was entirely asymptomatic.

The 12-lead ECG is shown (see image).



What is the best description of the ECG abnormality?

A: complete heart block ○

B: first-degree AV block ○

C: second-degree AV block type 1 ○

D: second-degree AV block type 2 ○

E: sinoatrial exit block ○

Question 72 ⌄

Next Question

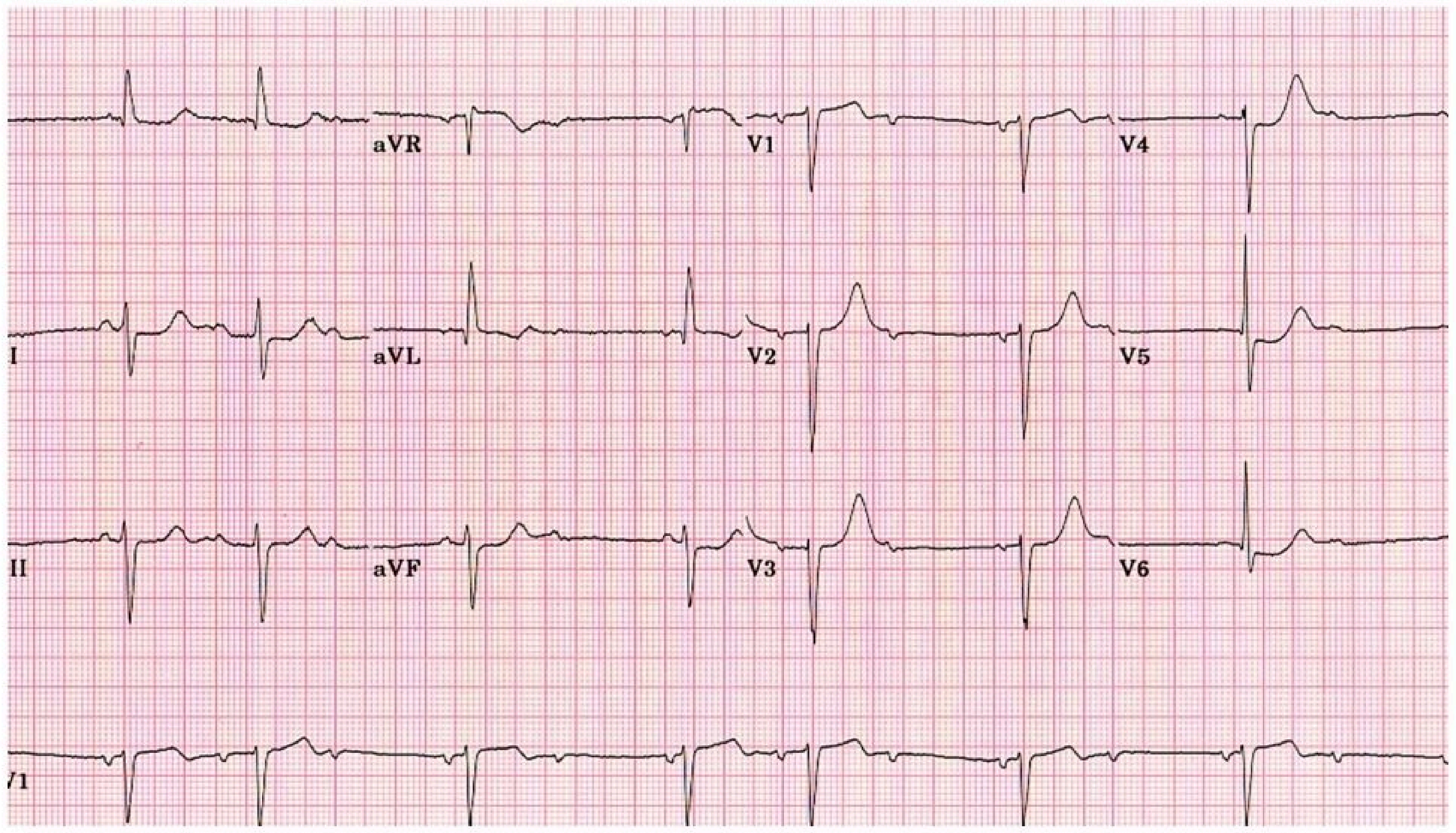
Question 72

No Answer Given

Incorrect

A 49-year-old man was referred by his general practitioner after he had noticed that his pulse was irregular. He was entirely asymptomatic.

The 12-lead ECG is shown (see image).



What is the best description of the ECG abnormality?

Answers

A: complete heart block
B: first-degree AV block
C: second-degree AV block type 1
D: second-degree AV block type 2
E: sinoatrial exit block

Correct answer: C

Explanation

(32%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The ECG shows frequent non-conducted P waves with a progressive increase in the PR interval before the ‘dropped’ beats. As a general rule, in second-degree AV block type 1 (Wenkebach AV block) the block occurs at the level of the AV node and so the QRST complexes are usually relatively normal. The AV node fatigues, causing a progressive increase in the PR interval until a P wave is not conducted. The QRST complexes usually occur in clusters of 2 or 3 (so called ‘footprint’ of Wenkebach AV block).

Second-degree AV block type 2 (Mobitz II block) occurs at the level of the branch bundles so most patients have broad QRTS complexes [either bifascicular block (RBBB and left anterior hemiblock) or LBBB]. The PR interval is primarily determined by conduction through the AV node so this remains normal until a QRST complex is dropped owing to intermittent failure of the one remaining branch bundle.

In first-degree heart block the PR interval is persistently prolonged but there are no non-conducted beats and in complete heart block the QRST complexes are regular and there is no relation between these and the P waves. In sinoatrial exit block there is an intermittent failure to generate P waves.

Question 73

A 45-year-old woman presented to the emergency department at 02.00 h with a history of three episodes of chest tightness and breathlessness in the previous 8 days. Each episode had started with a sudden feeling of tightness in the chest, associated with palpitations, and a feeling of extreme breathlessness. Although the palpitations and chest discomfort disappeared over several hours, the breathlessness persisted and worsened with each episode. That evening she had been working at her desk when the episode began and it was sufficiently severe to require immediate attendance at the emergency department.

On examination, she looked pale and breathless. Her respiratory rate was 25 breaths per minute. Her pulse was 110 beats per minute, regular, and her BP was 110/70 mmHg .Her JVP was 9 cm above the sternal angle and there was a prominent fourth sound on auscultation of the heart .Her liver was palpable 3 cm below the costal margin; her ankles were not swollen.

What is the most likely diagnosis?

A: atrial myxoma ○

B: fibrosing alveolitis ○

C: hypertrophic obstructive cardiomyopathy ○

D: primary pulmonary hypertension ○

E: pulmonary embolism ○

Question 73

Next Question

Question 73

No Answer Given

Incorrect

A 45-year-old woman presented to the emergency department at 02.00 h with a history of three episodes of chest tightness and breathlessness in the previous 8 days. Each episode had started with a sudden feeling of tightness in the chest, associated with palpitations, and a feeling of extreme breathlessness. Although the palpitations and chest discomfort disappeared over several hours, the breathlessness persisted and worsened with each episode. That evening she had been working at her desk when the episode began and it was sufficiently severe to require immediate attendance at the emergency department.

On examination, she looked pale and breathless. Her respiratory rate was 25 breaths per minute. Her pulse was 110 beats per minute, regular, and her BP was 110/70 mmHg .Her JVP was 9 cm above the sternal angle and there was a prominent fourth sound on auscultation of the heart .Her liver was palpable 3 cm below the costal margin; her ankles were not swollen.

What is the most likely diagnosis?

Answers

A: atrial myxoma
B: fibrosing alveolitis
C: hypertrophic obstructive cardiomyopathy
D: primary pulmonary hypertension
E: pulmonary embolism

Correct answer: E

Explanation

(37%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The combination of recurrent episodes of shortness of breath and chest tightness, with persistent dyspnoea, tachypnoea, tachycardia, markedly elevated JVP, and signs of acute right heart failure should lead to a high clinical suspicion of pulmonary embolus. Atrial myxoma might present in this way but is a much less likely diagnosis. Fibrosing alveolitis and primary pulmonary hypertension have a much more insidious onset. The presentation does not suggest hypertrophic obstructive cardiomyopathy.

Question 74

A 28-year-old woman from India presented with a 4-week history of a rash and soreness in her mouth.

On examination, she had ulcers on her soft palate and tongue. She had an extensive eruption of flaccid bullae and superficial erosions over her trunk and limbs.

What is the most appropriate confirmatory investigation?

- A: antinuclear antibodies ○
- B: direct immunofluorescence of skin ○
- C: electron microscopy of skin ○
- D: swab from mouth for bacterial culture ○
- E: swab from mouth for viral culture ○

Question 74 ⌄

Next Question

Question 74

No Answer Given

Incorrect

A 28-year-old woman from India presented with a 4-week history of a rash and soreness in her mouth.

On examination, she had ulcers on her soft palate and tongue. She had an extensive eruption of flaccid bullae and superficial erosions over her trunk and limbs.

What is the most appropriate confirmatory investigation?

Answers

A: antinuclear antibodies
B: direct immunofluorescence of skin
C: electron microscopy of skin
D: swab from mouth for bacterial culture
E: swab from mouth for viral culture

Correct answer: B

Explanation

(78%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This Indian woman presents with painful oral ulceration, flaccid blisters and erosions. All these features point to a diagnosis of pemphigus vulgaris. The definitive diagnostic test for pemphigus vulgaris is direct immunofluorescence of skin. Antinuclear antibodies would screen for lupus, which would rarely present with blistering. Electron microscopy could be used in the diagnosis of epidermolysis bullosa, which would present at a younger age. Bacterial swabs are for impetigo, which would not produce oral lesions. Viral swabs are for herpes simplex, which would not produce flaccid blisters.

Question 75

A 45-year-old man presented with a 2-month history of a tender lesion on his right hand. He had received a renal transplant 10 years previously for chronic kidney disease secondary to polycystic kidneys, since when he had taken prednisolone and tacrolimus.

On examination, he had a 1-cm, firm keratotic nodule on the back of his right hand.

What is the most appropriate management of the lesion?

- A: cryotherapy ○
- B: excision ○
- C: laser therapy ○
- D: reduce immunosuppression ○
- E: topical keratolytic therapy ○

Question 75

No Answer Given

Incorrect

A 45-year-old man presented with a 2-month history of a tender lesion on his right hand. He had received a renal transplant 10 years previously for chronic kidney disease secondary to polycystic kidneys, since when he had taken prednisolone and tacrolimus.

On examination, he had a 1-cm, firm keratotic nodule on the back of his right hand.

What is the most appropriate management of the lesion?

Answers

A: cryotherapy
B: excision
C: laser therapy
D: reduce immunosuppression
E: topical keratolytic therapy

Correct answer: B

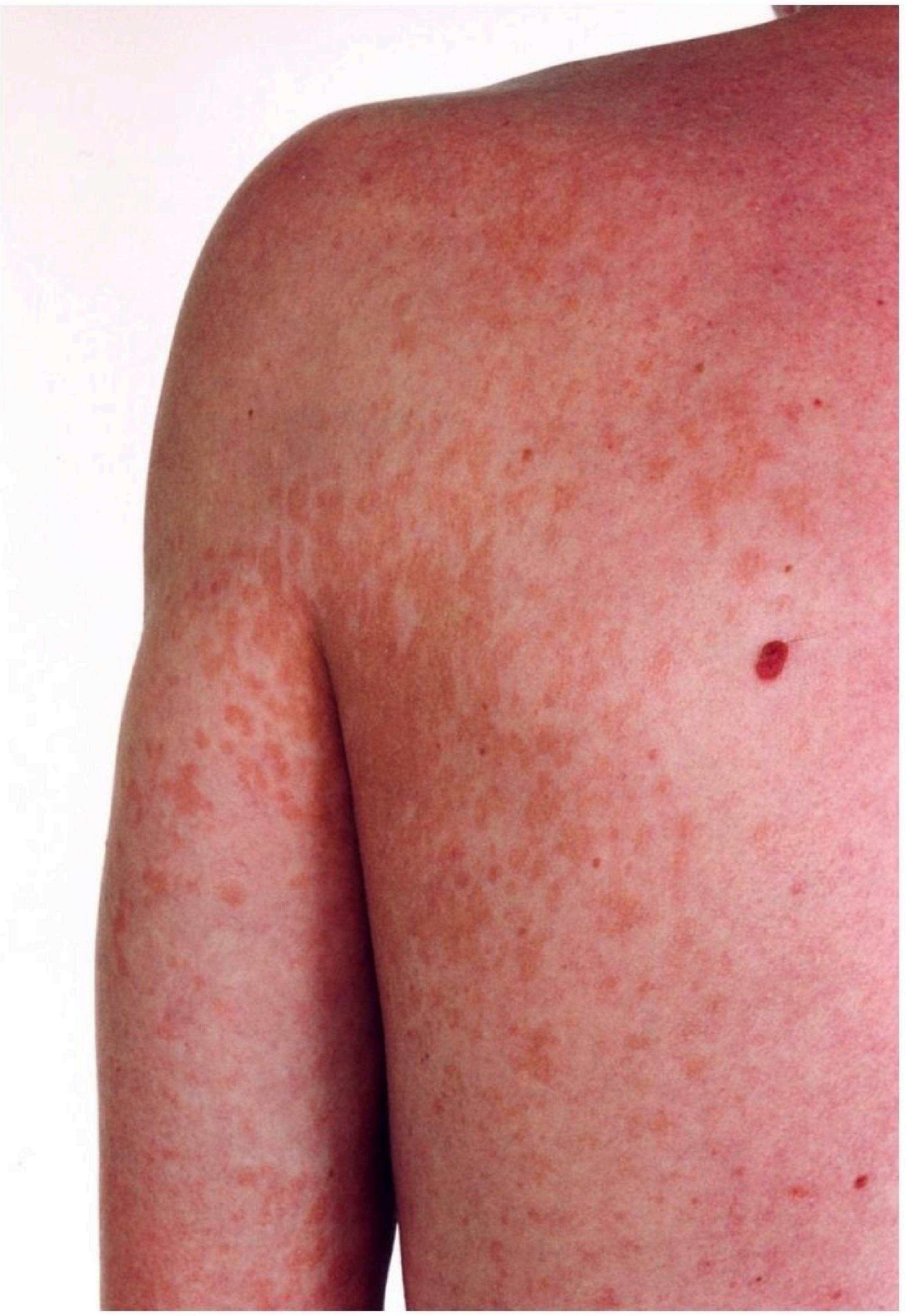
Explanation

(60%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A short history of a rapidly growing keratotic nodule, on a sun-exposed site, in an immunosuppressed patient, points strongly to a diagnosis of squamous cell carcinoma (SCC). The optimum management of SCC is surgical excision and histological analysis to confirm diagnosis and ensure complete removal. Cryotherapy and laser therapy would neither guarantee removal, nor provide histological proof of clearance. Reduced immunosuppression and topical keratolytic therapy would be ineffective.

Question 76

A 40-year-old man presented with a 7-month history of a progressive, asymptomatic, slightly scaly rash over his upper trunk and proximal part of his arms (see image). He was otherwise well and was taking no regular medication. Topical therapy had been ineffective.



What is the most appropriate systemic treatment?

- A: dapsone ○
- B: itraconazole ○
- C: methotrexate ○
- D: penicillin ○
- E: prednisolone ○

Question 76 ⌄

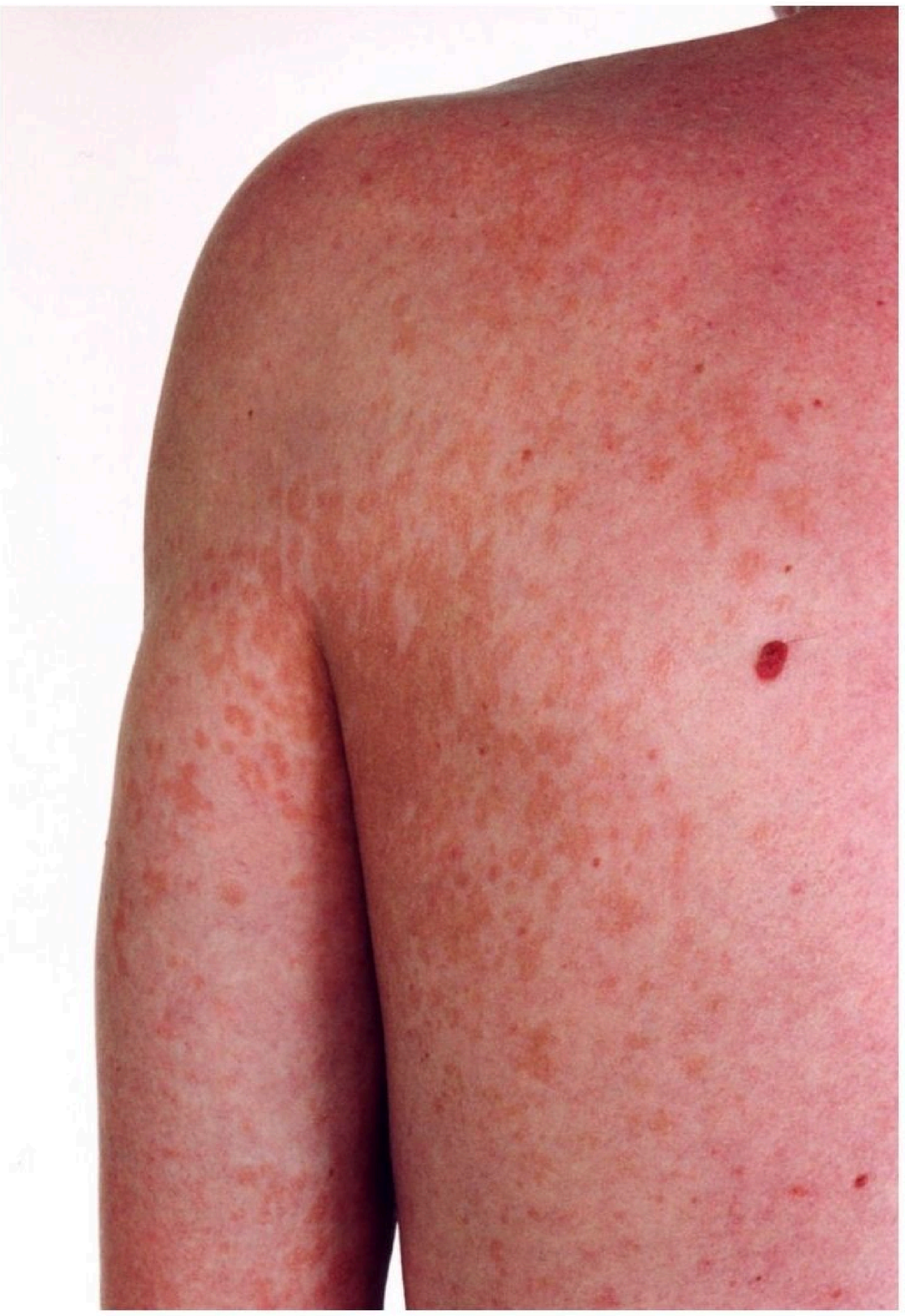
Next Question

Question 76

No Answer Given

Incorrect

A 40-year-old man presented with a 7-month history of a progressive, asymptomatic, slightly scaly rash over his upper trunk and proximal part of his arms (see image). He was otherwise well and was taking no regular medication. Topical therapy had been ineffective.



What is the most appropriate systemic treatment?

Answers

A: dapsone
B: itraconazole
C: methotrexate
D: penicillin
E: prednisolone

Correct answer: B

Explanation

(43%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The asymptomatic, fine, scaly, reddish-brown, macular, coalescent rash over the upper trunk is typical of pityriasis versicolor caused by the yeast Malassezia furfur. The only therapy listed that is effective against yeast is itraconazole.

Question 77

A 39-year-old woman presented with more pronounced facial hirsutism after the birth of her last child. She had recently been investigated by a gynaecologist for menstrual irregularities and abdominal pain. She was taking an antispasmodic drug for irritable bowel syndrome. Her father had type 2 diabetes mellitus.

On examination, she had a BMI of 31.0 kg/m^2 (18.0–25.0) and some abdominal striae. She had facial scarring from electrolysis.

Investigations:

serum cortisol (09.00 h)	670 nmol/L (320–700)
serum dehydroepiandrosterone sulphate	16 µmol/L (3–12)
serum 17-hydroxyprogesterone	8 nmol/L (1–10)
serum testosterone	3.8 nmol/L (0.5–3.0)
plasma follicle-stimulating hormone	9.2 U/L (2.5–10.0)
plasma luteinising hormone	18.4 U/L (2.5–10.0)

Investigations after overnight dexamethasone suppression test (1 mg):

serum cortisol (09.00 h)	<50 nmol/L (<50)
serum 17-hydroxyprogesterone	7 nmol/L (1–10)
serum testosterone	2.9 nmol/L (0.5–3.0)

What is the most likely diagnosis?

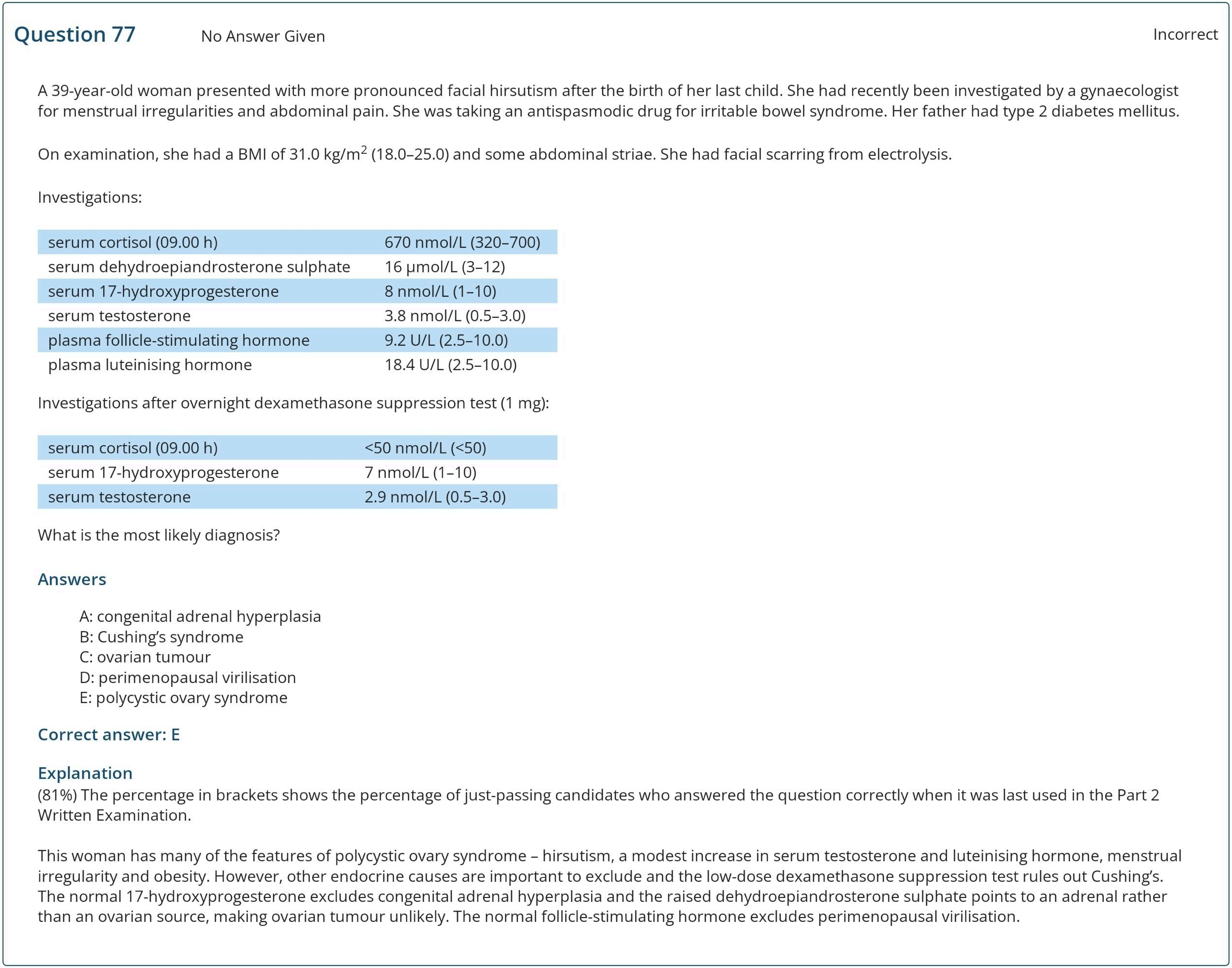
A: congenital adrenal hyperplasia ○

B: Cushing’s syndrome ○

C: ovarian tumour ○

D: perimenopausal virilisation ○

E: polycystic ovary syndrome ○



Question 77

No Answer Given

Incorrect

A 39-year-old woman presented with more pronounced facial hirsutism after the birth of her last child. She had recently been investigated by a gynaecologist for menstrual irregularities and abdominal pain. She was taking an antispasmodic drug for irritable bowel syndrome. Her father had type 2 diabetes mellitus.

On examination, she had a BMI of 31.0 kg/m^2 (18.0–25.0) and some abdominal striae. She had facial scarring from electrolysis.

Investigations:

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serum dehydroepiandrosterone sulphate	16 μmol/L (3–12)
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Investigations after overnight dexamethasone suppression test (1 mg):

serum cortisol (09.00 h)	<50 nmol/L (<50)
serum 17-hydroxyprogesterone	7 nmol/L (1–10)
serum testosterone	2.9 nmol/L (0.5–3.0)

What is the most likely diagnosis?

Answers

A: congenital adrenal hyperplasia
B: Cushing's syndrome
C: ovarian tumour
D: perimenopausal virilisation
E: polycystic ovary syndrome

Correct answer: E

Explanation

(81%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman has many of the features of polycystic ovary syndrome – hirsutism, a modest increase in serum testosterone and luteinising hormone, menstrual irregularity and obesity. However, other endocrine causes are important to exclude and the low-dose dexamethasone suppression test rules out Cushing's. The normal 17-hydroxyprogesterone excludes congenital adrenal hyperplasia and the raised dehydroepiandrosterone sulphate points to an adrenal rather than an ovarian source, making ovarian tumour unlikely. The normal follicle-stimulating hormone excludes perimenopausal virilisation.

Question 78

A 28-year-old woman was found to have osteoporosis of the thoracolumbar spine while being investigated for secondary amenorrhoea. Her history included Crohn's disease, for which she had received multiple courses of corticosteroids and had recently undergone a small bowel resection. She had never smoked and drank no alcohol.

On examination, she was clinically euthyroid with a small goitre, and exhibited normal secondary sexual characteristics. Her BP was 90/50 mmHg. Her BMI was 18.0 kg/m^2 (18.0–25.0).

Investigations:

short tetracosactide (Synacthen®) test (250 micrograms):	
serum cortisol (30 min after tetracosactide)	680 nmol/L (>450)
serum oestradiol	<50 pmol/L (200–400)
plasma follicle-stimulating hormone	0.7 U/L (2.5–10.0)
plasma luteinising hormone	0.6 U/L (2.5–10.0)
serum thyroid-stimulating hormone	0.3 mU/L (0.4–5.0)
serum free T4	10.5 pmol/L (10.0–22.0)
serum free T3	3.8 pmol/L (3.0–7.0)
anti-thyroid peroxidase antibodies	75 IU/mL (<50)

What is the most likely cause for her menstrual disturbance?

A: Hashimoto's thyroiditis ○

B: hypothalamic amenorrhoea ○

C: polycystic ovary syndrome ○

D: premature ovarian failure ○

E: previous corticosteroid therapy ○

Question 78 ⌄

Next Question

Question 78

No Answer Given

Incorrect

A 28-year-old woman was found to have osteoporosis of the thoracolumbar spine while being investigated for secondary amenorrhoea. Her history included Crohn's disease, for which she had received multiple courses of corticosteroids and had recently undergone a small bowel resection. She had never smoked and drank no alcohol.

On examination, she was clinically euthyroid with a small goitre, and exhibited normal secondary sexual characteristics. Her BP was 90/50 mmHg. Her BMI was 18.0 kg/m^2 (18.0–25.0).

Investigations:

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serum thyroid-stimulating hormone	0.3 mU/L (0.4–5.0)
serum free T4	10.5 pmol/L (10.0–22.0)
serum free T3	3.8 pmol/L (3.0–7.0)
anti-thyroid peroxidase antibodies	75 IU/mL (<50)

What is the most likely cause for her menstrual disturbance?

Answers

A: Hashimoto's thyroiditis
B: hypothalamic amenorrhoea
C: polycystic ovary syndrome
D: premature ovarian failure
E: previous corticosteroid therapy

Correct answer: B

Explanation

(70%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The clinical history provides several potential causes for secondary amenorrhoea but it is important to exclude pregnancy in all cases. Her normal short tetracosactide test excludes primary adrenal failure and corticosteroid secondary suppression. Her normal thyroid-stimulating hormone excludes Hashimoto's and her gonadotropins are low, suggesting hypothalamic amenorrhoea. Polycystic ovary syndrome can occur in women of normal BMI but would be very unusual in this relatively underweight patient. Hypothalamic amenorrhoea is common in women with anorexia, or who exercise vigorously or who control body weight for their career such as ballet dancers and models. It can also occur in malabsorption states such as coeliac disease. In this case, it would be important to exclude nutritional and vitamin deficiency as a result of her Crohn's. It should respond to nutritional supplementation and weight gain.

Question 79

A 45-year-old man presented with a 4-month history of double vision and headaches. The symptoms were of insidious onset. The headaches, which were situated over the right eye, had become progressively more severe and were worse on waking. He had noticed a loss of libido for the past 4 years.

Investigations:

haemoglobin	104 g/L (130–180)
serum creatinine	140 μmol/L (60–110)
serum cortisol (09.00 h)	<50 nmol/L (320–700)
serum prolactin	18 575 mU/L (100–360)
serum free T4	5.2 pmol/L (10.0–22.0)
MR scan of pituitary	large mass filling the sella turcica and extending into the right cavernous sinus and right suprasellar fossa to compress the optic nerve and chiasm

What is the most appropriate treatment for the pituitary tumour?

A: dopamine-receptor agonist therapy ○

B: endovascular embolisation ○

C: external-beam pituitary radiotherapy ○

D: transfrontal surgery ○

E: trans-sphenoidal surgery ○

Question 79 ⌄

Next Question

Question 79

No Answer Given

Incorrect

A 45-year-old man presented with a 4-month history of double vision and headaches. The symptoms were of insidious onset. The headaches, which were situated over the right eye, had become progressively more severe and were worse on waking. He had noticed a loss of libido for the past 4 years.

Investigations:

haemoglobin	104 g/L (130–180)
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MR scan of pituitary	large mass filling the sella turcica and extending into the right cavernous sinus and right suprasellar fossa to compress the optic nerve and chiasm

What is the most appropriate treatment for the pituitary tumour?

Answers

A: dopamine-receptor agonist therapy
B: endovascular embolisation
C: external-beam pituitary radiotherapy
D: transfrontal surgery
E: trans-sphenoidal surgery

Correct answer: A

Explanation

(24%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has a macroprolactinoma as evidenced by the very high prolactin levels. First-line treatment of these tumours is dopamine agonist therapy followed by surgery (usually transfrontal). Radiotherapy treatments are reserved for patients who are either intolerant or resistant to dopamine agonists. The tumours can start to shrink rapidly after initiation of treatment, with visual field improvements discernible within days and visible shrinkage evident on imaging within weeks. Normalisation of prolactin levels occur in up to 90% of all prolactinoma patients.

Remember that non-prolactin secreting pituitary tumours can cause elevation of prolactin levels by compressing the pituitary stalk and preventing delivery of dopamine, which usually inhibits prolactin production. Prolactin levels are generally between 600–3000 mU/L in this situation, not as high as in macroprolactinoma.

Question 80

A 41-year-old man was admitted from the emergency department following a seizure. He was agitated and confused, and unable to give a history. While in hospital, he vomited 1.5 L of fresh blood.

On examination, he was unkempt, icteric and malnourished. His pulse was 120 beats per minute and his BP was 90/50 mmHg, with a postural drop of 20 mmHg. His abdomen was distended, with shifting dullness to percussion. He had melaena on rectal examination.

Investigations:

haemoglobin	83 g/L (130–180)
MCV	121 fL (80–96)
white cell count	4.5×10^9/L (4.0–11.0)
platelet count	55×10^9/L (150–400)
prothrombin time	23.0 s (11.5–15.5)

What is the most appropriate intravenous treatment?

A: octreotide ○

B: omeprazole ○

C: phenytoin ○

D: ranitidine ○

E: terlipressin ○

Question 80 ⌄

Next Question

Question 80

No Answer Given

Incorrect

A 41-year-old man was admitted from the emergency department following a seizure. He was agitated and confused, and unable to give a history. While in hospital, he vomited 1.5 L of fresh blood.

On examination, he was unkempt, icteric and malnourished. His pulse was 120 beats per minute and his BP was 90/50 mmHg, with a postural drop of 20 mmHg. His abdomen was distended, with shifting dullness to percussion. He had melaena on rectal examination.

Investigations:

haemoglobin	83 g/L (130–180)
MCV	121 fL (80–96)
white cell count	4.5 × 10^9/L (4.0–11.0)
platelet count	55 × 10^9/L (150–400)
prothrombin time	23.0 s (11.5–15.5)

What is the most appropriate intravenous treatment?

Answers

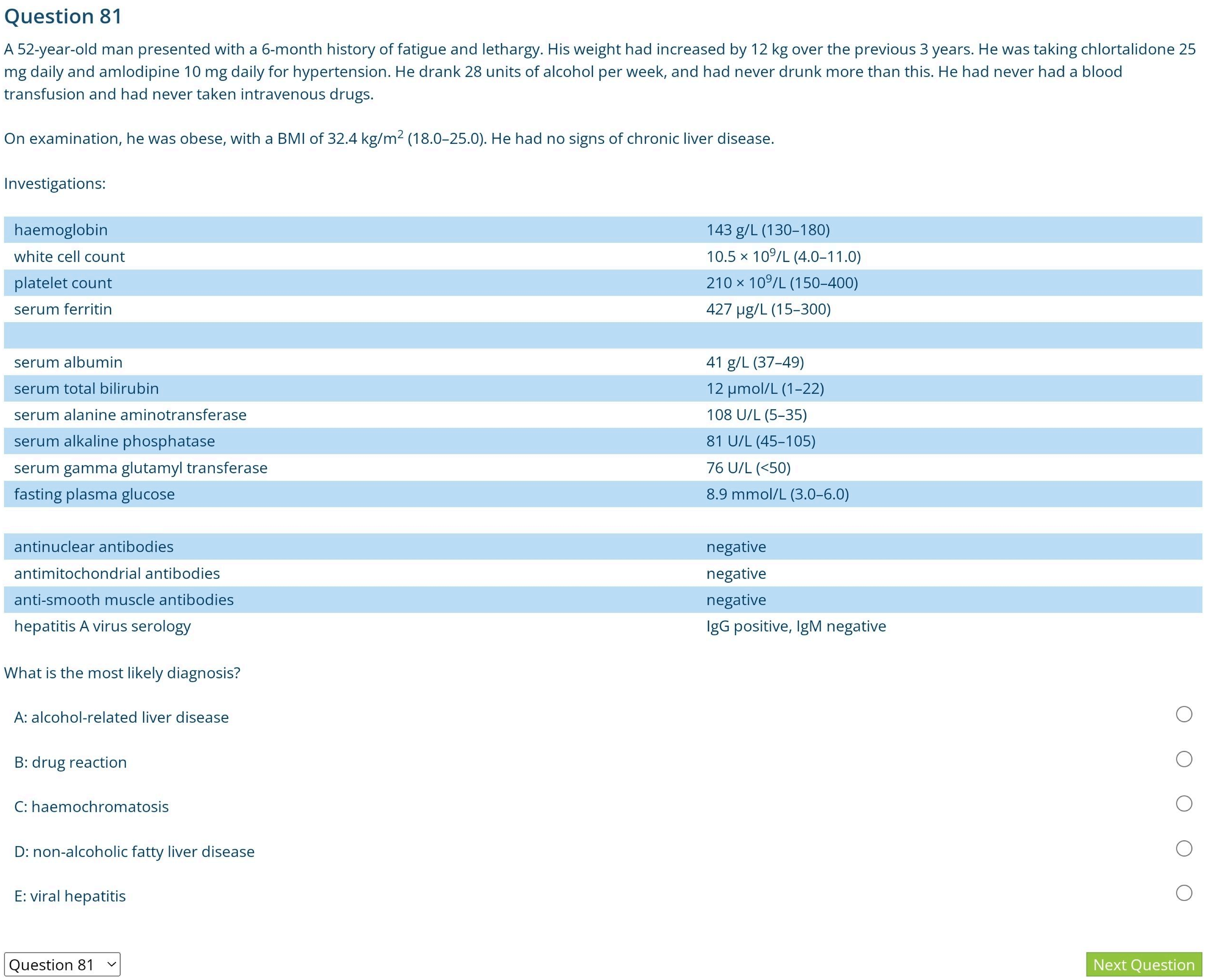
A: octreotide
B: omeprazole
C: phenytoin
D: ranitidine
E: terlipressin

Correct answer: E

Explanation

(82%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The examination and blood tests all point to decompensated liver disease as the underlying pathology (raised MCV, low platelets, and raised prothrombin time). In this clinical scenario, a variceal bleed must be high on the differential list and it would be appropriate to start terlipressin empirically to lower portal pressure.



Question 81

A 52-year-old man presented with a 6-month history of fatigue and lethargy. His weight had increased by 12 kg over the previous 3 years. He was taking chlortalidone 25 mg daily and amlodipine 10 mg daily for hypertension. He drank 28 units of alcohol per week, and had never drunk more than this. He had never had a blood transfusion and had never taken intravenous drugs.

On examination, he was obese, with a BMI of 32.4 kg/m^2 (18.0–25.0). He had no signs of chronic liver disease.

Investigations:

haemoglobin	143 g/L (130–180)
white cell count	10.5 × 10^9/L (4.0–11.0)
platelet count	210 × 10^9/L (150–400)
serum ferritin	427 μg/L (15–300)
serum albumin	41 g/L (37–49)
serum total bilirubin	12 μmol/L (1–22)
serum alanine aminotransferase	108 U/L (5–35)
serum alkaline phosphatase	81 U/L (45–105)
serum gamma glutamyl transferase	76 U/L (<50)
fasting plasma glucose	8.9 mmol/L (3.0–6.0)

antinuclear antibodies	negative
antimitochondrial antibodies	negative
anti-smooth muscle antibodies	negative
hepatitis A virus serology	IgG positive, IgM negative

What is the most likely diagnosis?

A: alcohol-related liver disease ○

B: drug reaction ○

C: haemochromatosis ○

D: non-alcoholic fatty liver disease ○

E: viral hepatitis ○

Question 81

No Answer Given

Incorrect

A 52-year-old man presented with a 6-month history of fatigue and lethargy. His weight had increased by 12 kg over the previous 3 years. He was taking chlortalidone 25 mg daily and amlodipine 10 mg daily for hypertension. He drank 28 units of alcohol per week, and had never drunk more than this. He had never had a blood transfusion and had never taken intravenous drugs.

On examination, he was obese, with a BMI of 32.4 kg/m^2 (18.0–25.0). He had no signs of chronic liver disease.

Investigations:

haemoglobin	143 g/L (130–180)
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serum gamma glutamyl transferase	76 U/L (<50)
fasting plasma glucose	8.9 mmol/L (3.0–6.0)

antinuclear antibodies	negative
antimitochondrial antibodies	negative
anti-smooth muscle antibodies	negative
hepatitis A virus serology	IgG positive, IgM negative

What is the most likely diagnosis?

Answers

A: alcohol-related liver disease
B: drug reaction
C: haemochromatosis
D: non-alcoholic fatty liver disease
E: viral hepatitis

Correct answer: D

Explanation

(73%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient is obese and has hypertension and an abnormal fasting glucose, all in keeping with metabolic syndrome, and non-alcoholic fatty liver disease as the most likely cause of his raised alanine aminotransferase. IgG positive hepatitis A serology indicates previous, rather than current, infection. Mild elevation of serum ferritin is common in a range of diseases, but is not high enough to indicate haemochromatosis.

Question 82

A 26-year-old woman, who had a 10-year history of ulcerative colitis and had started taking azathioprine 150 mg daily 8 weeks previously, was found to have abnormal liver function tests. She had missed two menstrual periods and had taken a pregnancy test, which had confirmed that she was pregnant.

Investigations:

haemoglobin	102 g/L (115–165)
MCV	74 fL (80–96)
white cell count	12.2 × 10^9/L (4.0–11.0)
platelet count	154 × 10^9/L (150–400)
serum albumin	44 g/L (37–49)
serum total bilirubin	20 μmol/L (1–22)
serum alanine aminotransferase	124 U/L (5–35)
serum aspartate aminotransferase	86 U/L (1–31)
serum alkaline phosphatase	100 U/L (45–105)
serum gamma glutamyl transferase	98 U/L (4–35)

What is the most likely cause of the abnormal liver function tests?

A: azathioprine ○

B: chronic autoimmune hepatitis ○

C: fatty liver of pregnancy ○

D: primary biliary cholangitis ○

E: primary sclerosing cholangitis ○

Question 82

No Answer Given

Incorrect

A 26-year-old woman, who had a 10-year history of ulcerative colitis and had started taking azathioprine 150 mg daily 8 weeks previously, was found to have abnormal liver function tests. She had missed two menstrual periods and had taken a pregnancy test, which had confirmed that she was pregnant.

Investigations:

haemoglobin	102 g/L (115–165)
MCV	74 fL (80–96)
white cell count	12.2 × 10^9/L (4.0–11.0)
platelet count	154 × 10^9/L (150–400)
serum albumin	44 g/L (37–49)
serum total bilirubin	20 µmol/L (1–22)
serum alanine aminotransferase	124 U/L (5–35)
serum aspartate aminotransferase	86 U/L (1–31)
serum alkaline phosphatase	100 U/L (45–105)
serum gamma glutamyl transferase	98 U/L (4–35)

What is the most likely cause of the abnormal liver function tests?

Answers

A: azathioprine
B: chronic autoimmune hepatitis
C: fatty liver of pregnancy
D: primary biliary cholangitis
E: primary sclerosing cholangitis

Correct answer: A

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has a mild transaminitis, and the recent introduction of azathioprine (which can cause leukopenia and abnormal liver function tests) is the most likely explanation. Primary biliary cholangitis and primary sclerosing cholangitis cause an ‘obstructive’ pattern of liver function tests. The pregnancy is too early for fatty liver of pregnancy.

Question 83
Next Question

Question 83

A 34-year-old woman was reviewed in the gastroenterology clinic. She had a 5-year history of ulcerative proctitis and, since her original presentation, had experienced one or two mild-to-moderate relapses per year. At the time of review, she was having a flare, with her bowels open four times per day (baseline one to two times), with some urgency and bleeding. She was taking oral mesalazine 2 g twice daily.

Examination of her abdomen was normal.

Investigations:

haemoglobin	116 g/L (115–165)
white cell count	6.3×10^9/L (4.0–11.0)
platelet count	289×10^9/L (150–400)
serum CRP	2 mg/L (<10)
stool cultures	negative
sigmoidoscopy	inflamed distal 7 cm of rectum, with normal mucosa above

What is the most appropriate management?

A: azathioprine ○

B: increase oral mesalazine dosage ○

C: mesalazine suppository ○

D: methotrexate ○

E: oral prednisolone ○

Question 83

No Answer Given

Incorrect

A 34-year-old woman was reviewed in the gastroenterology clinic. She had a 5-year history of ulcerative proctitis and, since her original presentation, had experienced one or two mild-to-moderate relapses per year. At the time of review, she was having a flare, with her bowels open four times per day (baseline one to two times), with some urgency and bleeding. She was taking oral mesalazine 2 g twice daily.

Examination of her abdomen was normal.

Investigations:

haemoglobin	116 g/L (115–165)
white cell count	6.3 × 10^9/L (4.0–11.0)
platelet count	289 × 10^9/L (150–400)
serum CRP	2 mg/L (<10)
stool cultures	negative
sigmoidoscopy	inflamed distal 7 cm of rectum, with normal mucosa above

What is the most appropriate management?

Answers

A: azathioprine
B: increase oral mesalazine dosage
C: mesalazine suppository
D: methotrexate
E: oral prednisolone

Correct answer: C

Explanation

(62%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Topical treatment with mesalazine suppositories is the most appropriate first-line measure for a proctitis flare. The patient is already on a high dose of oral 5-aminosalicylic acid.

Question 84

An 82-year-old man was brought to the medical outpatient clinic by his daughter. He usually lived alone, and his daughter reported that, over the previous 6 months, he had become increasingly confused and had developed urinary incontinence. She did not report any personality change apart from a recent loss of short-term memory. She did, however, describe features consistent with agnosia, apraxia and high-level language problems, and stated that he had had recent difficulty in paying bills at home.

His score on Montreal cognitive assessment was 23/30. Cranial and peripheral nerve examinations were normal. He had a normal gait.

What is the most likely diagnosis?

A: Alzheimer’s disease ○

B: chronic subdural haematoma ○

C: dementia with Lewy bodies ○

D: normal pressure hydrocephalus ○

E: pseudodementia ○

Question 84 ⌄

Next Question

Question 84

No Answer Given

Incorrect

An 82-year-old man was brought to the medical outpatient clinic by his daughter. He usually lived alone, and his daughter reported that, over the previous 6 months, he had become increasingly confused and had developed urinary incontinence. She did not report any personality change apart from a recent loss of short-term memory. She did, however, describe features consistent with agnosia, apraxia and high-level language problems, and stated that he had had recent difficulty in paying bills at home.

His score on Montreal cognitive assessment was 23/30. Cranial and peripheral nerve examinations were normal. He had a normal gait.

What is the most likely diagnosis?

Answers

A: Alzheimer’s disease
B: chronic subdural haematoma
C: dementia with Lewy bodies
D: normal pressure hydrocephalus
E: pseudodementia

Correct answer: A

Explanation

(53%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A general cognitive decline, of gradual onset, over several months’ duration is described. Epidemiologically, the most likely cause of this is Alzheimer’s disease.

Chronic subdural haematoma is both less prevalent than Alzheimer’s disease and, although the presentation is variable, is more likely to present with delirium than dementia.

Dementia with Lewy bodies characteristically presents with visual hallucinations and fluctuations in arousal which are not described here. There are also no signs of parkinsonism, which is a common association.

Normal pressure hydrocephalus is both less prevalent than Alzheimer’s disease and characteristically presents with the triad of urinary incontinence, unsteadiness and cognitive impairment.

Pseudodementia is characteristic of depression. There is little from the history here to suggest that the patient is depressed.

Question 85

A 73-year-old woman with advanced multiple sclerosis was admitted from home with a blocked urinary catheter.

On examination, she had a large but superficial and already granulating area of ulceration over her sacrum. There was little exudate.

What type of dressing is most appropriate?

A: alginate ○

B: antibacterial ○

C: hydrocolloid ○

D: hydrogel ○

E: silver impregnated ○

Question 85

Next Question

Question 85

No Answer Given

Incorrect

A 73-year-old woman with advanced multiple sclerosis was admitted from home with a blocked urinary catheter.

On examination, she had a large but superficial and already granulating area of ulceration over her sacrum. There was little exudate.

What type of dressing is most appropriate?

Answers

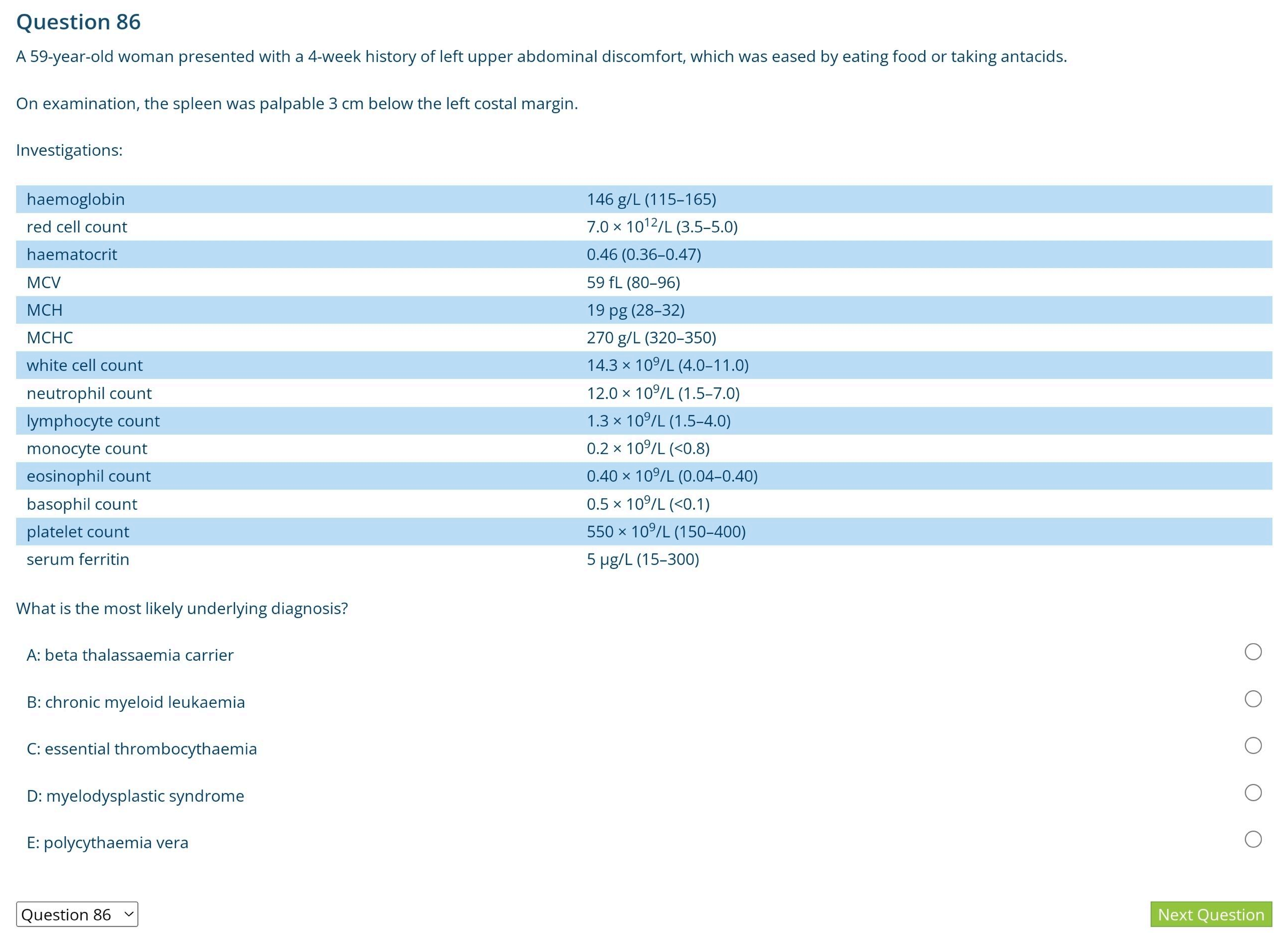
A: alginate
B: antibacterial
C: hydrocolloid
D: hydrogel
E: silver impregnated

Correct answer: C

Explanation

(23%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A hydrocolloid dressing will maintain tissue integrity and is the correct answer here. Alginate dressings are useful in exudative wounds. Antibacterial and silver-impregnated dressings are indicated only when there are signs of local infection. Hydrocolloid dressings are used for more advanced ulcers, where they are used to pack the wound.



Question 86

A 59-year-old woman presented with a 4-week history of left upper abdominal discomfort, which was eased by eating food or taking antacids.

On examination, the spleen was palpable 3 cm below the left costal margin.

Investigations:

haemoglobin	146 g/L (115–165)
red cell count	7.0×10^{12}/L (3.5–5.0)
haematocrit	0.46 (0.36–0.47)
MCV	59 fL (80–96)
MCH	19 pg (28–32)
MCHC	270 g/L (320–350)
white cell count	14.3×10^{9}/L (4.0–11.0)
neutrophil count	12.0×10^{9}/L (1.5–7.0)
lymphocyte count	1.3×10^{9}/L (1.5–4.0)
monocyte count	0.2×10^{9}/L (<0.8)
eosinophil count	0.40×10^{9}/L (0.04–0.40)
basophil count	0.5×10^{9}/L (<0.1)
platelet count	550×10^{9}/L (150–400)
serum ferritin	5 μg/L (15–300)

What is the most likely underlying diagnosis?

A: beta thalassaemia carrier ○

B: chronic myeloid leukaemia ○

C: essential thrombocythaemia ○

D: myelodysplastic syndrome ○

E: polycythaemia vera ○

Question 86

No Answer Given

Incorrect

A 59-year-old woman presented with a 4-week history of left upper abdominal discomfort, which was eased by eating food or taking antacids.

On examination, the spleen was palpable 3 cm below the left costal margin.

Investigations:

haemoglobin	146 g/L (115–165)
red cell count	7.0 × 10^{12}/L (3.5–5.0)
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monocyte count	0.2 × 10^{9}/L (<0.8)
eosinophil count	0.40 × 10^{9}/L (0.04–0.40)
basophil count	0.5 × 10^{9}/L (<0.1)
platelet count	550 × 10^{9}/L (150–400)
serum ferritin	5 μg/L (15–300)

What is the most likely underlying diagnosis?

Answers

A: beta thalassaemia carrier
B: chronic myeloid leukaemia
C: essential thrombocythaemia
D: myelodysplastic syndrome
E: polycythaemia vera

Correct answer: E

Explanation

(39%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has a significantly raised red cell count and splenomegaly. This is compatible with the diagnosis of polycythaemia vera. Raised white cell and platelet counts support this diagnosis. Typically haemoglobin and haematocrit are increased in polycythaemia vera, but these parameters are normal in this patient because of co-existing severe iron deficiency (note microcytosis and very low serum ferritin).

A beta-thalassaemia carrier has microcytosis and raised red cell count, but serum ferritin is normal. The patient’s family origin also indicates that beta-thalassaemia is unlikely.

Splenomegaly, leukocytosis and thrombocytosis are seen in chronic myeloid leukaemia, but erythrocytosis is not a feature.

Splenomegaly and leukocytosis are not a feature of essential thrombocythaemia.

Myelodysplastic syndrome usually presents with cytopenia and erythrocytosis is not a feature.

Question 87

A 66-year-old man developed a swollen painful swelling of his right leg on day 7 after a right total hip replacement. He had a history of chronic kidney disease stage 4. He was otherwise well. He had been given subcutaneous unfractionated heparin as thromboprophylaxis, which was started 12 hours before surgery (day 0).

Investigations (day 7):

ultrasound scan of proximal leg vein	right femoral vein thrombosis

haemoglobin	129 g/L (130–180)
white cell count	12.3 × 10^9/L (4.0–11.0)
platelet count	48 × 10^9/L (150–400)

eGFR (MDRD	25 mL/min/1.73 m^2 (>60)

Investigations (day 0):

haemoglobin	131 g/L (130–180)
white cell count	10.6 × 10^9/L (4.0–11.0)
platelet count	200 × 10^9/L (150–400)

eGFR (MDRD)	28 mL/min/1.73 m^2 (>60)

Unfractionated heparin was stopped.

What is the most appropriate next step in management?

- A: apixaban ○
- B: argatroban ○
- C: dabigatran ○
- D: tinzaparin ○
- E: warfarin ○

Question 87 ⌄ Next Question

Question 87

No Answer Given

Incorrect

A 66-year-old man developed a swollen painful swelling of his right leg on day 7 after a right total hip replacement. He had a history of chronic kidney disease stage 4. He was otherwise well. He had been given subcutaneous unfractionated heparin as thromboprophylaxis, which was started 12 hours before surgery (day 0).

Investigations (day 7):

ultrasound scan of proximal leg vein	right femoral vein thrombosis

haemoglobin	129 g/L (130–180)
white cell count	12.3 × 10^9/L (4.0–11.0)
platelet count	48 × 10^9/L (150–400)

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haemoglobin	131 g/L (130–180)
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platelet count	200 × 10^9/L (150–400)

eGFR (MDRD)	28 mL/min/1.73 m^2 (>60)

Unfractionated heparin was stopped.

What is the most appropriate next step in management?

Answers

A: apixaban
B: argatroban
C: dabigatran
D: tinzaparin
E: warfarin

Correct answer: B

Explanation

(90%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has developed a deep vein thrombosis despite prophylactic heparin. His platelet count has also fallen by more than 50% of baseline level. These occurred 7 days after starting heparin. These clinical findings are typical of heparin-induced thrombocytopenia (HIT).

HIT is caused by the development of IgG antibodies directed against a complex of platelet factor 4 (PF4) and heparin. These antibodies activate platelets leading to thrombosis despite thrombocytopenia. It is more common with the use of unfractionated heparin than low-molecular-weight heparin. If the platelet count falls by 30% or more and/or the patient develops new thrombosis or redness at the heparin injection sites between days 4 and 14 of heparin administration, HIT should be considered.

The treatment of HIT is to stop any form of heparin and anticoagulate with argatroban or danaparoid. Direct oral anticoagulants are not licensed for use in HIT and should be avoided in chronic kidney disease stage 4. Warfarin should not be used until the platelet count has recovered to the normal range. When introduced, argatroban or danaparoid must be continued until the INR is therapeutic.

Question 88

A 79-year-old man underwent routine preoperative assessment for hip replacement and was found to have an abnormal full blood count. Apart from an episode of herpes zoster several months previously, he had been fit and well.

Examination was unremarkable.

Investigations:

haemoglobin	135 g/L (130–180)
white cell count	22.3 × 10^9/L (4.0–11.0)
neutrophil count	4.9 × 10^9/L (1.5–7.0)
lymphocyte count	17.1 × 10^9/L (1.5–4.0)
platelet count	140 × 10^9/L (150–400)
blood film	smear cells present
immunophenotyping of lymphocytes	compatible with chronic lymphocytic leukaemia
CT scan of chest, abdomen and pelvis	normal

What is the most appropriate next management step?

A: chlorambucil ○

B: corticosteroids ○

C: ibrutinib ○

D: observe ○

E: splenectomy ○

Question 88

Next Question

Question 88

No Answer Given

Incorrect

A 79-year-old man underwent routine preoperative assessment for hip replacement and was found to have an abnormal full blood count. Apart from an episode of herpes zoster several months previously, he had been fit and well.

Examination was unremarkable.

Investigations:

haemoglobin	135 g/L (130–180)
white cell count	22.3 × 10^9/L (4.0–11.0)
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platelet count	140 × 10^9/L (150–400)
blood film	smear cells present
immunophenotyping of lymphocytes	compatible with chronic lymphocytic leukaemia
CT scan of chest, abdomen and pelvis	normal

What is the most appropriate next management step?

Answers

A: chlorambucil
B: corticosteroids
C: ibrutinib
D: observe
E: splenectomy

Correct answer: D

Explanation

(92%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The most common cause of an isolated lymphocytosis in an adult is chronic lymphocytic leukaemia (CLL). The diagnosis is usually made incidentally from a full blood count checked for another reason. The diagnosis is confirmed by immunophenotyping of peripheral blood white cells. It is a smouldering disease and incurable. Treatment of asymptomatic early cases has not improved life expectancy. Many patients, therefore, do not require anti-leukaemia treatment but active monitoring only.

The indications for anti-leukaemia treatment in CLL are constitutional symptoms such as weight loss, fever or night sweats, bone marrow failure manifest by anaemia and thrombocytopenia and symptomatic enlargement of lymph nodes, spleen or liver. This patient is well and does not have any indication for treatment.

If treatment is indicated for this patient, anti-CD20 monoclonal antibody (e.g. obinutuzumab), chlorambucil or bendamustine is appropriate. Ibrutinib, which is an inhibitor of Bruton's tyrosine kinase (BTK), is used only if there is TP53 mutation. Corticosteroids are used only for autoimmune cytopenias (e.g. autoimmune thrombocytopenic purpura) associated with the underlying leukaemia. Splenectomy is not an option for treatment of CLL.

Question 89

A 38-year-old woman presented with a 4-day history of malaise, headaches and fever.

On examination, she had a few bruises but no other physical signs.

Investigations:

haemoglobin	109 g/L (115–165)
white cell count	15.0 × 10^9/L (4.0–11.0)
neutrophil count	11.9 × 10^9/L (1.5–7.0)
platelet count	12 × 10^9/L (150–400)
prothrombin time	14.7 s (11.5–15.5)
activated partial thromboplastin time	37 s (30–40)
blood film	fragmentation of red cells
serum urea	9.2 mmol/L (2.5–7.0)
serum creatinine	130 μmol/L (60–110)
serum lactate dehydrogenase	1430 U/L (10–250)

What is the most likely diagnosis?

A: acute myeloid leukaemia ○

B: disseminated intravascular coagulation ○

C: haemolytic uraemic syndrome ○

D: immune thrombocytopenic purpura ○

E: thrombotic thrombocytopenic purpura ○

Question 89

Next Question

Question 89

No Answer Given

Incorrect

A 38-year-old woman presented with a 4-day history of malaise, headaches and fever.

On examination, she had a few bruises but no other physical signs.

Investigations:

haemoglobin	109 g/L (115–165)
white cell count	15.0 × 10^9/L (4.0–11.0)
neutrophil count	11.9 × 10^9/L (1.5–7.0)
platelet count	12 × 10^9/L (150–400)
prothrombin time	14.7 s (11.5–15.5)
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blood film	fragmentation of red cells
serum urea	9.2 mmol/L (2.5–7.0)
serum creatinine	130 μmol/L (60–110)
serum lactate dehydrogenase	1430 U/L (10–250)

What is the most likely diagnosis?

Answers

A: acute myeloid leukaemia
B: disseminated intravascular coagulation
C: haemolytic uraemic syndrome
D: immune thrombocytopenic purpura
E: thrombotic thrombocytopenic purpura

Correct answer: E

Explanation

This patient has anaemia and thrombocytopenia with fragmentation of red cells apparent in blood film. This is suggestive of a microangiopathic haemolytic anaemia. Given the history of fever and headaches, no significant renal impairment and normal coagulation screen, the diagnosis is most likely to be thrombotic thrombocytopenic purpura (TTP). Raised serum lactate dehydrogenase is a feature of TTP and can be used to guide response to treatment. TTP typically presents with neurological symptoms and signs such as headaches, seizures, altered consciousness or focal neurological deficits.

Haemolytic uraemic syndrome (HUS) and TTP may overlap. However, a classic case of HUS would present with severe acute kidney injury typically following a bout of bloody diarrhoea caused by Escherichia coli O157.

Immune thrombocytopenic purpura is unlikely here as it does not cause fever or headaches, and is not associated with red cell fragmentation.

Disseminated intravascular coagulation (DIC) can be excluded here by normal coagulation screen.

Acute myeloid leukemia is the least likely cause of this patient’s thrombocytopenia as the patient’s neutrophil count is normal and blood film shows no abnormal white cells. DIC may be a feature of acute myeloid leukaemia but the patient does not have DIC.

Question 90

A previously healthy 55-year-old man presented with a 3-month history of weight loss, diarrhoea, tiredness and increasing breathlessness.

On examination, his temperature was 38.0°C, his pulse was 130 beats per minute and his BP was 160/95 mmHg. He had a diastolic heart murmur. Examination of his chest was normal. Abdominal examination showed a palpable mass in the left iliac fossa.

Investigations:

haemoglobin	110 g/L (130–180)
white cell count	12.0×10^9/L (4.0–11.0)
neutrophil count	10.7×10^9/L (1.5–7.0)
lymphocyte count	0.4×10^9/L (1.5–4.0)
serum CRP	120 mg/L (<10)
blood culture	Gram-positive cocci
faecal occult blood	positive

What is the most likely causative organism?

A: Streptococcus agalactiae ○

B: Streptococcus gallolyticus (S. bovis) ○

C: Streptococcus milleri ○

D: Streptococcus pyogenes ○

E: Streptococcus viridans ○

Question 90 ⌄ Next Question

Question 90

No Answer Given

Incorrect

A previously healthy 55-year-old man presented with a 3-month history of weight loss, diarrhoea, tiredness and increasing breathlessness.

On examination, his temperature was 38.0°C, his pulse was 130 beats per minute and his BP was 160/95 mmHg. He had a diastolic heart murmur. Examination of his chest was normal. Abdominal examination showed a palpable mass in the left iliac fossa.

Investigations:

haemoglobin	110 g/L (130–180)
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lymphocyte count	0.4 × 10^9/L (1.5–4.0)
serum CRP	120 mg/L (<10)
blood culture	Gram-positive cocci
faecal occult blood	positive

What is the most likely causative organism?

Answers

A: Streptococcus agalactiae
B: Streptococcus gallolyticus (S. bovis)
C: Streptococcus milleri
D: Streptococcus pyogenes
E: Streptococcus viridans

Correct answer: B

Explanation

(88%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has endocarditis. The positive faecal occult blood test suggests he may also have pathology in his bowel. Streptococcus gallolyticus is part of the normal large bowel flora. In patients with bowel pathology, such as a colonic cancer, this organism can cause transient bacteraemia and this can lead to endocarditis. Any patient with endocarditis caused by this organism should have large-bowel investigations (e.g. a CT scan of abdomen or colonoscopy). Streptococcus agalactiae (sometimes described as group B streptococcus) is associated with the genital tract. Streptococcus milleri causes liver and brain abscesses. Streptococcus pyogenes causes pharyngitis and cellulitis. Streptococcus viridans can cause endocarditis but is not usually associated with bowel pathology.

Question 91

A 77-year-old man, who was undergoing chemotherapy and radiotherapy for a rectal adenocarcinoma, developed profuse foul-smelling diarrhoea, which was positive on Clostridium difficile toxin testing. He had taken oral co-amoxiclav during the previous week for a respiratory tract infection.

The diarrhoea did not improve with oral metronidazole for 7 days.

What is the most appropriate next step in treatment?

A: change to intravenous metronidazole ○

B: change to intravenous vancomycin ○

C: change to oral Lactobacillus spp. ○

D: change to oral vancomycin ○

E: continue with oral metronidazole for at least a further 10 days ○

Question 91

Next Question

Question 91

No Answer Given

Incorrect

A 77-year-old man, who was undergoing chemotherapy and radiotherapy for a rectal adenocarcinoma, developed profuse foul-smelling diarrhoea, which was positive on Clostridium difficile toxin testing. He had taken oral co-amoxiclav during the previous week for a respiratory tract infection.

The diarrhoea did not improve with oral metronidazole for 7 days.

What is the most appropriate next step in treatment?

Answers

A: change to intravenous metronidazole
B: change to intravenous vancomycin
C: change to oral Lactobacillus spp.
D: change to oral vancomycin
E: continue with oral metronidazole for at least a further 10 days

Correct answer: D

Explanation

(85%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

If a patient with Clostridium difficile infection is failing to respond to oral metronidazole, the treatment should be changed to oral vancomycin. Intravenous vancomycin is not effective for Clostridium difficile infection as it does not cross the bowel wall. Intravenous metronidazole is used as an addition to oral vancomycin for patients with complicated or life-threatening disease where there is concern that the vancomycin may be delivered too slowly to the colon. Oral lactobacillus is known as probiotic therapy. This can be used as an adjunctive therapy but is of uncertain benefit. It would be inappropriate to continue the oral metronidazole treatment which is not working.

Question 92

A 76-year-old man with type 2 diabetes mellitus was admitted with a 4-day history of lower central back pain. He had been treated at home with bed rest and simple analgesia, but he had deteriorated and was now immobile.

On examination, he was tender over the lumbar spine. There were no focal neurological signs.

Investigations:

haemoglobin	117 g/L (130–180)
white cell count	11.7 × 10^9/L (4.0–11.0)
neutrophil count	8.8 × 10^9/L (1.5–7.0)
platelet count	530 × 10^9/L (150–400)
ESR	7 mm/1st h (<20)
serum sodium	140 mmol/L (137–144)
serum potassium	3.4 mmol/L (3.5–4.9)
serum urea	10.3 mmol/L (2.5–7.0)
serum creatinine	117 µmol/L (60–110)
fasting plasma glucose	12.6 mmol/L (3.0–6.0)
haemoglobin A_{1c}	57 mmol/mol (20–42)
blood culture	Staphylococcus aureus in 2/2 bottles

What is the most appropriate imaging investigation?

A: CT scan of lumbar spine ○

B: isotope bone scan ○

C: isotope-labelled white cell scan ○

D: MR scan of lumbar spine ○

E: skeletal survey ○

Question 92 ⌄

Next Question

Question 92

No Answer Given

Incorrect

A 76-year-old man with type 2 diabetes mellitus was admitted with a 4-day history of lower central back pain. He had been treated at home with bed rest and simple analgesia, but he had deteriorated and was now immobile.

On examination, he was tender over the lumbar spine. There were no focal neurological signs.

Investigations:

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fasting plasma glucose	12.6 mmol/L (3.0–6.0)
haemoglobin A_{1c}	57 mmol/mol (20–42)
blood culture	Staphylococcus aureus in 2/2 bottles

What is the most appropriate imaging investigation?

Answers

A: CT scan of lumbar spine
B: isotope bone scan
C: isotope-labelled white cell scan
D: MR scan of lumbar spine
E: skeletal survey

Correct answer: D

Explanation

(86%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient is likely to have infected discitis given the history, clinical findings and positive blood cultures. Staphylococcus aureus is the most common cause of infected discitis. An MR scan of spine is the most appropriate investigation to diagnose infected discitis as it has the greatest sensitivity.

Question 93

A 48-year-old woman was admitted to the acute medical assessment unit with a 1-week history of sore throat, blocked nose and earache in the right ear. Over the previous 2 days, she had developed worsening headache, neck stiffness and photophobia. After arriving at hospital, she had had two tonic-clonic seizures.

On examination, her temperature was 38.7°C, her pulse was 104 beats per minute, her BP was 106/68 mmHg and her respiratory rate was 12 breaths per minute. She was drowsy with neck stiffness and generally brisk reflexes. She had no other neurological signs.

Investigations:

random plasma glucose	6.1 mmol/L

CSF:	
opening pressure	460 mmH_2O (120–250)
total protein	1.85 g/L (0.15–0.45)
glucose	2.9 mmol/L (3.3–4.4)
white cell count	2017/μL (≤5); 100% neutrophils
Gram stain	no organisms seen

What is the most likely causative organism?

A: Haemophilus influenzae ○

B: Listeria monocytogenes ○

C: Mycobacterium tuberculosis ○

D: Neisseria meningitidis ○

E: Streptococcus pneumoniae ○

Question 93

No Answer Given

Incorrect

A 48-year-old woman was admitted to the acute medical assessment unit with a 1-week history of sore throat, blocked nose and earache in the right ear. Over the previous 2 days, she had developed worsening headache, neck stiffness and photophobia. After arriving at hospital, she had had two tonic-clonic seizures.

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glucose	2.9 mmol/L (3.3–4.4)
white cell count	2017/μL (≤5); 100% neutrophils
Gram stain	no organisms seen

What is the most likely causative organism?

Answers

A: Haemophilus influenzae
B: Listeria monocytogenes
C: Mycobacterium tuberculosis
D: Neisseria meningitidis
E: Streptococcus pneumoniae

Correct answer: E

Explanation

(39%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has meningitis complicating an ear infection. This clinical situation is nearly always due to Streptococcus pneumoniae. The very high protein is consistent with Streptococcus pneumoniae infection or Mycobacterium tuberculosis infection. Haemophilus influenzae and Neisseria meningitides also cause bacterial meningitis but there is usually no preceding history of sinusitis or ear infection. Listeria spp. causes a lymphocytic meningitis in the elderly and immunocompromised. Mycobacterium tuberculosis causes chronic lymphocytic meningitis.

Question 94

A 40-year-old man presented with a 2-day history of occipital headache of sudden onset, vertigo and unsteadiness. He was also choking on solids and reported nasal regurgitation of fluids. He had a history of hypertension and smoked 20 cigarettes per day.

On examination, his temperature was 37.5°C. He had right-sided partial ptosis. His right pupil was smaller than the left and both reacted normally to light. His voice was hoarse and, on attempting to say “aah”, his palate moved upwards and to the left. His gait was unsteady and when trying to walk he fell towards his right side.

What is the most likely diagnosis?

A: cerebellar haemorrhage ○

B: cerebral abscess ○

C: cerebral vasculitis ○

D: skull-base metastases ○

E: vertebral artery dissection ○

Question 94

No Answer Given

Incorrect

A 40-year-old man presented with a 2-day history of occipital headache of sudden onset, vertigo and unsteadiness. He was also choking on solids and reported nasal regurgitation of fluids. He had a history of hypertension and smoked 20 cigarettes per day.

On examination, his temperature was 37.5°C. He had right-sided partial ptosis. His right pupil was smaller than the left and both reacted normally to light. His voice was hoarse and, on attempting to say “aah”, his palate moved upwards and to the left. His gait was unsteady and when trying to walk he fell towards his right side.

What is the most likely diagnosis?

Answers

A: cerebellar haemorrhage
B: cerebral abscess
C: cerebral vasculitis
D: skull-base metastases
E: vertebral artery dissection

Correct answer: E

Explanation

(82%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The sudden-onset headache, vertigo and unsteadiness would indicate that this is an acute vascular event, thus either a cerebellar haemorrhage or a vertebral artery dissection.

In vertebral artery dissection, focal neurological signs attributable to ischaemia of the brainstem or cerebellum ultimately develop in 85% of patients. This patient has a lateral medullary involvement (ipsilateral Horner’s syndrome, ipsilateral laryngeal, pharyngeal, and palatal hemiparalysis) and cerebellar involvement (unsteadiness).

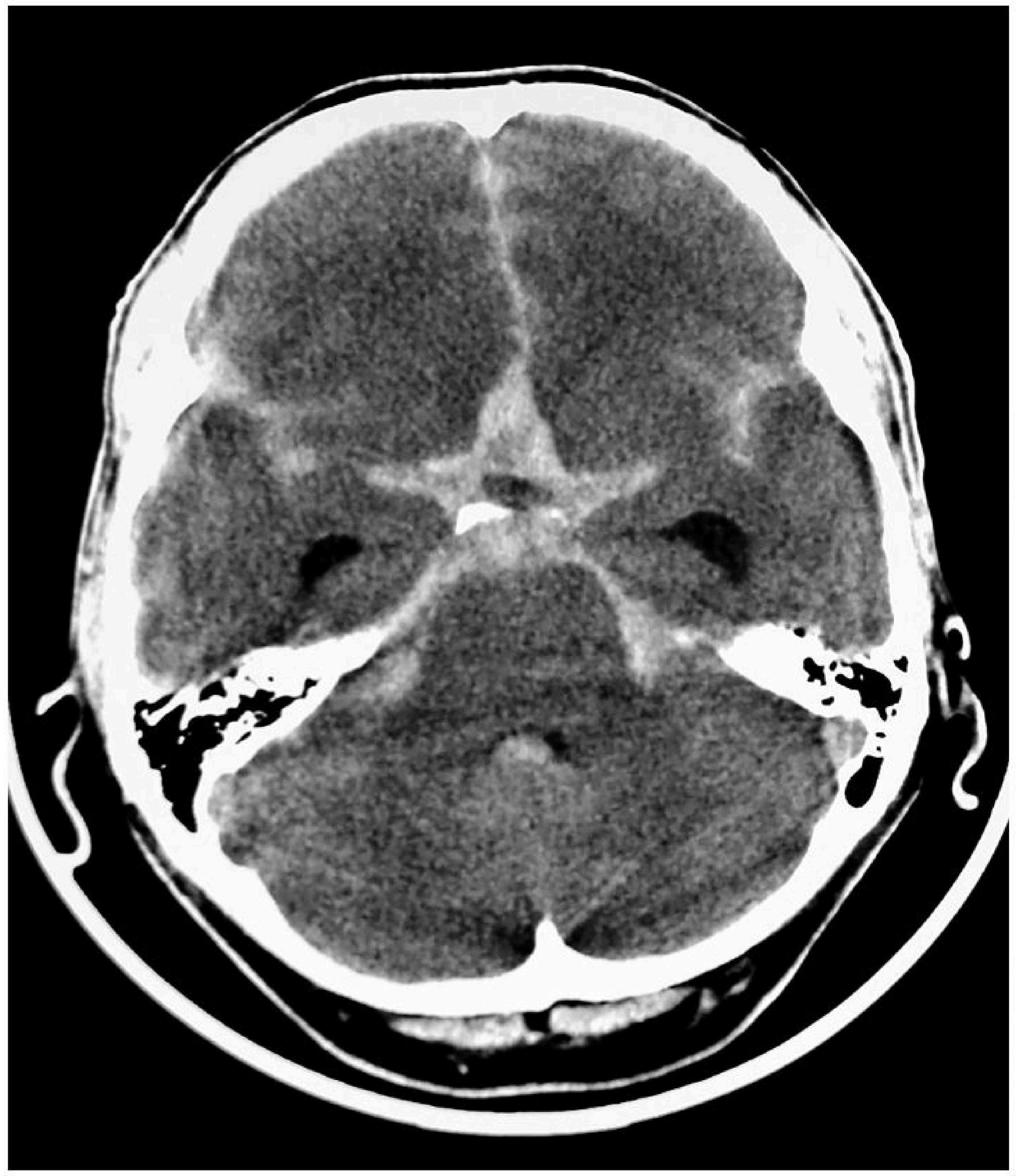
Question 95

A 36-year-old homeless woman was found unconscious in the street.

On examination, her temperature was 37.8°C. She had marked meningism and her GCS was 6. Her pupils reacted to light and her fundi were normal. She had no lateralising signs.

Investigations on admission:

CT scan of head (unenhanced)	see image



What is the most likely diagnosis?

A: cerebral venous sinus thrombosis ○

B: malignant meningitis ○

C: meningococcal meningitis ○

D: subarachnoid haemorrhage ○

E: tuberculous meningitis ○

Question 95

Next Question

Question 95

No Answer Given

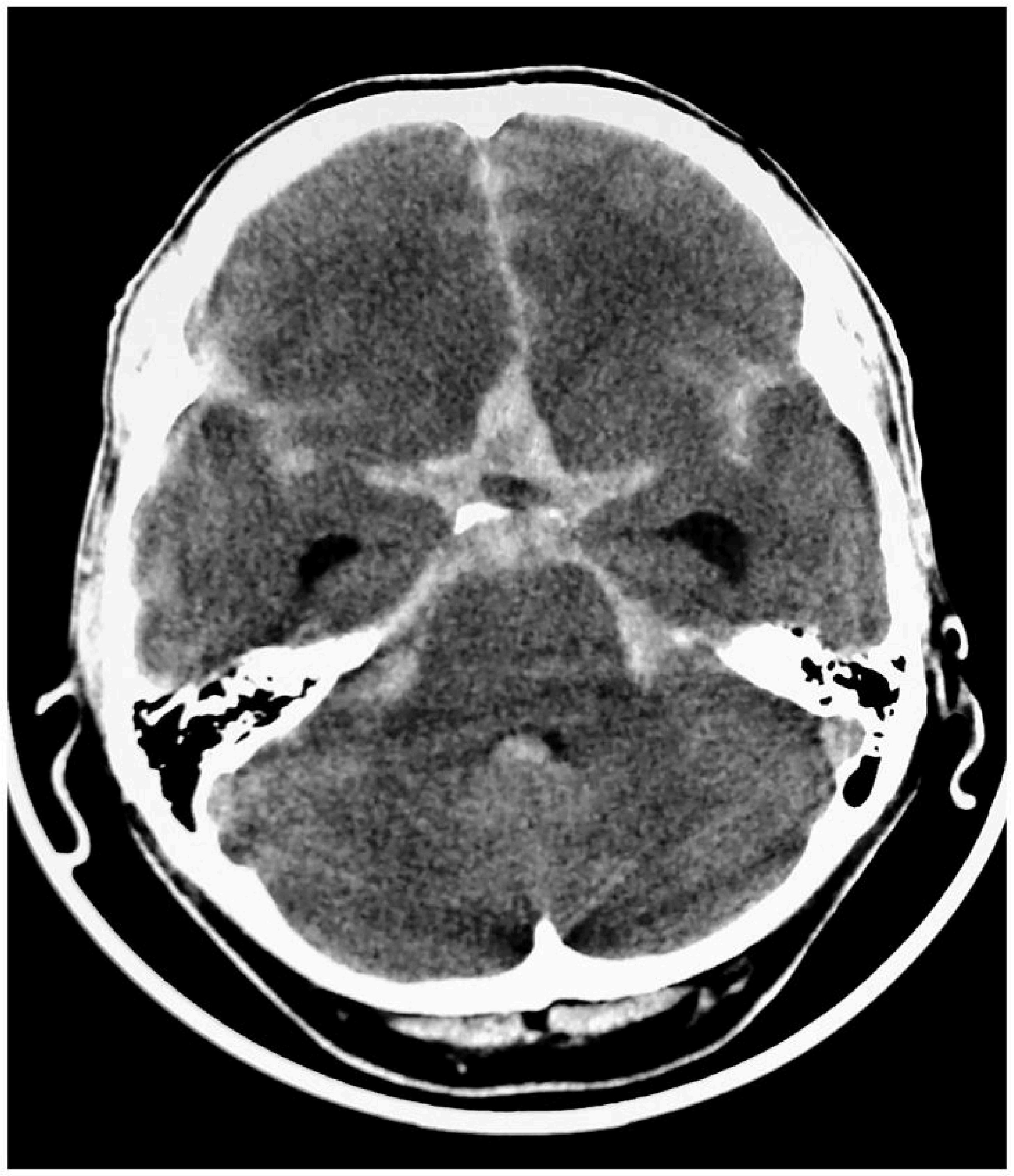
Incorrect

A 36-year-old homeless woman was found unconscious in the street.

On examination, her temperature was 37.8°C. She had marked meningism and her GCS was 6. Her pupils reacted to light and her fundi were normal. She had no lateralising signs.

Investigations on admission:

CT scan of head (unenhanced)	see image



What is the most likely diagnosis?

Answers

- A: cerebral venous sinus thrombosis
- B: malignant meningitis
- C: meningococcal meningitis
- D: subarachnoid haemorrhage
- E: tuberculous meningitis

Correct answer: D

Explanation

(69%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

An easy image to interpret. On an unenhanced scan this could only be blood or pus and the acute presentation suggests haemorrhage.

The clinical scenario of ‘found on street with coma and meningism’ suggests that the cranial problem did not evolve over a few days (tuberculous meningitis, malignant meningitis); bacterial meningitis would also usually have a lead–in time. Cerebral venous thrombosis usually has a relatively normal CT scan.

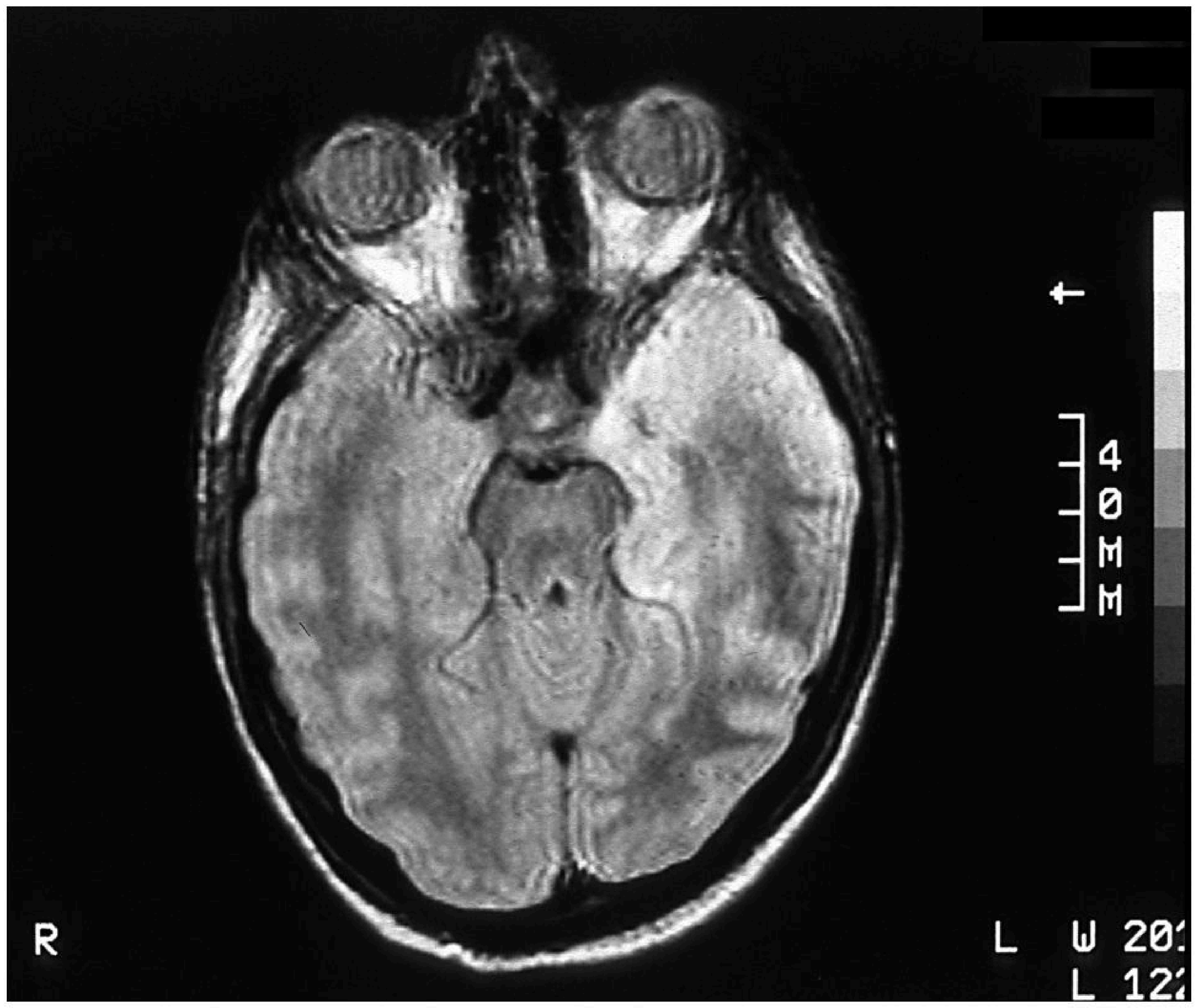
Question 96

A 35-year-old man presented with a 5-day history of confusion and fever. He had returned from a safari holiday in Kenya 1 week previously. Before presentation, his general practitioner had administered 1.2 g of intravenous benzylpenicillin.

On examination, he was comatose, with mild neck stiffness and a right extensor plantar response.

Investigations:

random plasma glucose	5.2 mmol/L
CSF:	
total protein	0.60 g/L (0.15–0.45)
glucose	3.5 mmol/L (3.3–4.4)
white cell count	20/μL (≤5)
cytology	predominantly lymphocytes
Gram stain	negative
MR scan of brain (T1 weighted)	see image



A: aciclovir ○

B: cefotaxime ○

C: dexamethasone ○

D: fluconazole ○

E: quinine ○

Question 96

Next Question

Question 96

No Answer Given

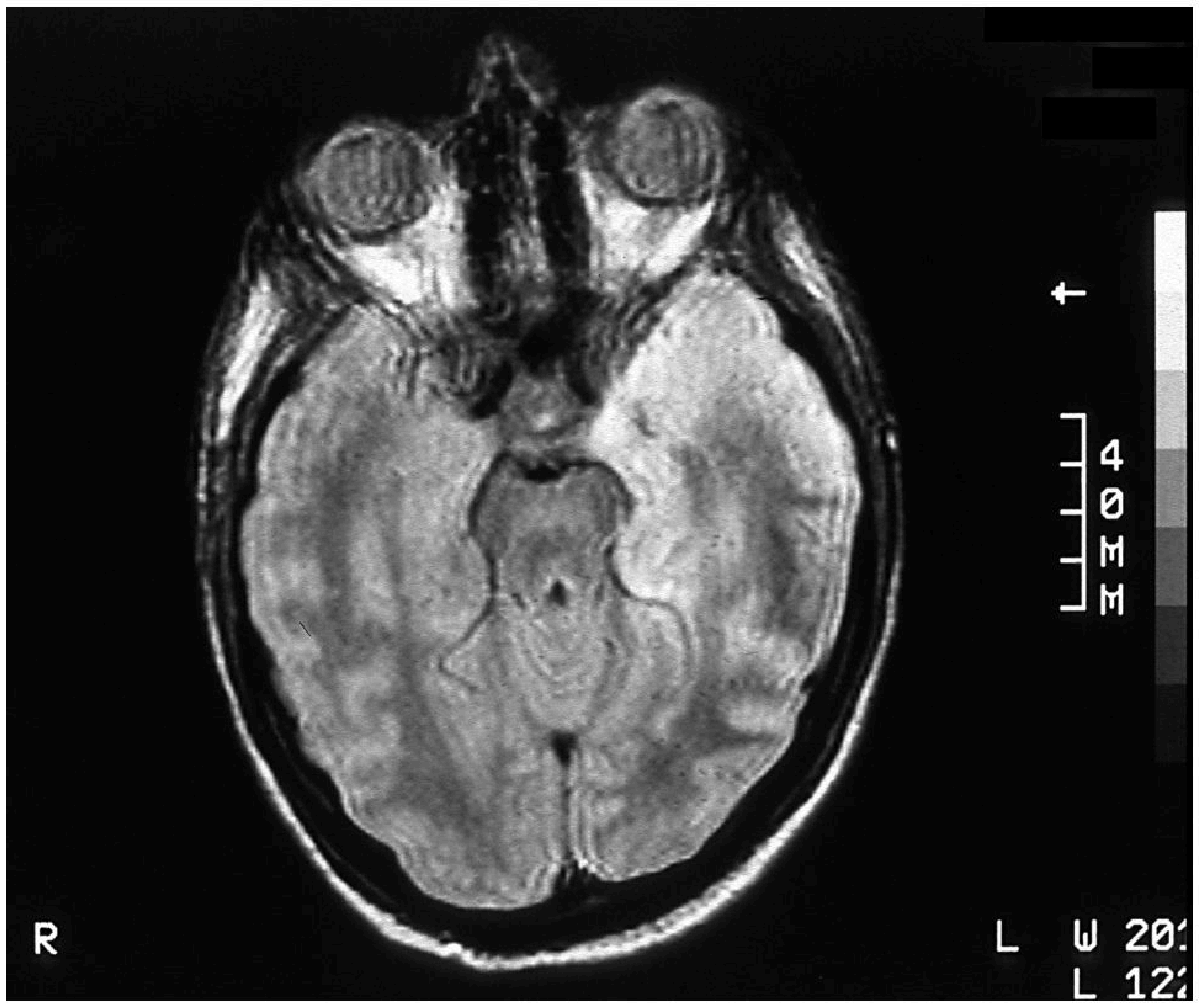
Incorrect

A 35-year-old man presented with a 5-day history of confusion and fever. He had returned from a safari holiday in Kenya 1 week previously. Before presentation, his general practitioner had administered 1.2 g of intravenous benzylpenicillin.

On examination, he was comatose, with mild neck stiffness and a right extensor plantar response.

Investigations:

random plasma glucose	5.2 mmol/L
CSF:	
total protein	0.60 g/L (0.15–0.45)
glucose	3.5 mmol/L (3.3–4.4)
white cell count	20/µL (≤5)
cytology	predominantly lymphocytes
Gram stain	negative
MR scan of brain (T1 weighted)	see image



Answers

- A: aciclovir
- B: cefotaxime
- C: dexamethasone
- D: fluconazole
- E: quinine

Correct answer: A

Explanation

(86%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The MR scan shows evidence of increased signal in the left temporal lobe, confined predominantly to the grey matter, which is very suggestive for herpes simplex encephalitis. CSF examination shows an increased white cell count, predominantly of lymphocytes. Herpes simplex meningo-encephalitis is the most likely diagnosis. The treatment is aciclovir.

Question 97

A 40-year-old professional pianist presented with numbness in the middle digit of his left hand and consequent impairment of his piano-playing technique. He had diffuse pain in his left arm, extending up to his shoulder.

Examination showed weakness of his left triceps and extension of left metacarpophalangeal joints. There was a reduced left triceps tendon reflex. He had sensory impairment, mainly in the third digit of his left hand, but also, to a lesser extent, in his index and ring fingers.

What is the most likely diagnosis?

A: axillary nerve compression ○

B: C7 nerve root compression ○

C: compression of the medial trunk of the brachial plexus ○

D: median nerve compression ○

E: radial nerve compression ○

Question 97 ⌄

Next Question

Question 97

No Answer Given

Incorrect

A 40-year-old professional pianist presented with numbness in the middle digit of his left hand and consequent impairment of his piano-playing technique. He had diffuse pain in his left arm, extending up to his shoulder.

Examination showed weakness of his left triceps and extension of left metacarpophalangeal joints. There was a reduced left triceps tendon reflex. He had sensory impairment, mainly in the third digit of his left hand, but also, to a lesser extent, in his index and ring fingers.

What is the most likely diagnosis?

Answers

A: axillary nerve compression
B: C7 nerve root compression
C: compression of the medial trunk of the brachial plexus
D: median nerve compression
E: radial nerve compression

Correct answer: B

Explanation

(68%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Clinical anatomy correlation question, with a classical picture for C7 root compression.

Axillary nerve compression gives deltoid weakness and a patch of sensory disturbance over the upper outer arm (not hand).

Medial trunk compression gives medial forearm pain and ulnar sensory disturbance (not more lateral hand and no triceps weakness).

Median nerve compression would not give triceps weakness.

Radial nerve weakness gives wrist drop.

Question 98

A 34-year-old woman presented with a 1-week history of progressive dysphagia, breathlessness and double vision. She required assisted ventilation and nasogastric feeding.

Examination (while she was awake, on a ventilator) showed normal pupils, incomplete external ophthalmoparesis and bilateral partial ptosis. She was unable to swallow. She had predominantly proximal limb weakness, normal deep tendon reflexes and normal sensation.

Investigations:

serum creatine kinase	270 U/L (24–170)
anti-acetylcholine receptor antibodies	negative
edrophonium chloride test	positive
CT scan of chest	normal

What is the most likely diagnosis?

- A: botulism ○
- B: Miller Fisher syndrome ○
- C: myasthenia gravis ○
- D: organophosphate poisoning ○
- E: polymyositis ○

Question 98

No Answer Given

Incorrect

A 34-year-old woman presented with a 1-week history of progressive dysphagia, breathlessness and double vision. She required assisted ventilation and nasogastric feeding.

Examination (while she was awake, on a ventilator) showed normal pupils, incomplete external ophthalmoparesis and bilateral partial ptosis. She was unable to swallow. She had predominantly proximal limb weakness, normal deep tendon reflexes and normal sensation.

Investigations:

serum creatine kinase	270 U/L (24–170)
anti-acetylcholine receptor antibodies	negative
edrophonium chloride test	positive
CT scan of chest	normal

What is the most likely diagnosis?

Answers

A: botulism
B: Miller Fisher syndrome
C: myasthenia gravis
D: organophosphate poisoning
E: polymyositis

Correct answer: C

Explanation

(26%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This patient has presented with ptosis, diplopia, bulbar symptoms and respiratory involvement. In conjunction with a positive edrophonium chloride test, myasthenia gravis is the most likely diagnosis.

In botulism, patients commonly have dilated or fixed pupils.

Miller Fisher syndrome is characterised by the clinical triad of ophthalmoplegia, ataxia and areflexia.

In organophosphate poisoning, there is diaphoresis and diarrhoea, miosis, bradycardia, bronchospasm, bronchorrhoea, nausea and vomiting, excess lacrimation, hypersalivation, anxiety, emotional lability, restlessness, confusion, ataxia, tremors, seizures, and coma.

The creatine kinase level is usually in the thousands in polymyositis.

Question 99

A 27-year-old woman was brought to the emergency department because of an acute change in her mental status. Her partner reported that she had been well that morning but, on returning home from work, he had found her unresponsive and restless. Her only previous medical history was two first-trimester miscarriages during the previous 3 years.

On examination, she was jittery and restless. She was apyrexial and she had no neck stiffness. She had livedo reticularis on her legs. She had bilaterally extensor plantar responses. While in the emergency department, she had a tonic-clonic seizure.

What is the most likely diagnosis?

A: cerebral artery infarction ○

B: cerebral venous sinus thrombosis ○

C: herpes simplex encephalitis ○

D: intracerebral haemorrhage ○

E: subarachnoid haemorrhage ○

Question 99 ⌄ Next Question

Question 99

No Answer Given

Incorrect

A 27-year-old woman was brought to the emergency department because of an acute change in her mental status. Her partner reported that she had been well that morning but, on returning home from work, he had found her unresponsive and restless. Her only previous medical history was two first-trimester miscarriages during the previous 3 years.

On examination, she was jittery and restless. She was apyrexial and she had no neck stiffness. She had livedo reticularis on her legs. She had bilaterally extensor plantar responses. While in the emergency department, she had a tonic-clonic seizure.

What is the most likely diagnosis?

Answers

A: cerebral artery infarction
B: cerebral venous sinus thrombosis
C: herpes simplex encephalitis
D: intracerebral haemorrhage
E: subarachnoid haemorrhage

Correct answer: B

Explanation

(88%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

An intracerebral infarction or haemorrhage would have focal or lateralised neurological signs, which were absent. Subarachnoid haemorrhage sufficient to cause this level of drowsiness would have neck stiffness.

This leaves herpes simplex encephalitis and cerebral venous infarction. Although the former could cause seizure, she is afebrile and the mode of onset does not suggest an infective process. The presence of bilateral extensor plantar response, altered mental state and seizures are suggestive of sagittal sinus thrombosis (CVT). Presence of livedo reticularis is suggestive of a systemic disease predisposing to CVT.

Question 100

A 45-year-old man gave a 2-month history of headache. He described attacks of excruciating pain around his right eye and temple, each lasting for 45 minutes. He usually experienced one attack per day, frequently in the early hours of the morning. He reported nasal congestion and drooping of his right eyelid during attacks.

Examination was normal.

What is the most appropriate treatment?

- A: amitriptyline ○
- B: carbamazepine ○
- C: gabapentin ○
- D: naproxen ○
- E: sumatriptan ○

Question 100 ⌄

Next Question

Question 100

No Answer Given

Incorrect

A 45-year-old man gave a 2-month history of headache. He described attacks of excruciating pain around his right eye and temple, each lasting for 45 minutes. He usually experienced one attack per day, frequently in the early hours of the morning. He reported nasal congestion and drooping of his right eyelid during attacks.

Examination was normal.

What is the most appropriate treatment?

Answers

A: amitriptyline
B: carbamazepine
C: gabapentin
D: naproxen
E: sumatriptan

Correct answer: E

Explanation

(59%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The description of the headaches is classic for cluster headaches. It is a unilateral severe headache that usually lasts for about 1 hour, occurs at approximately the same time each day during the cluster period and is associated with autonomic features such as nasal stuffiness and ptosis. Sumatriptan is the most appropriate treatment.

Question 101

A 45-year-old woman was admitted with a 2-week history of worsening breathlessness. Chemotherapy for metastatic breast cancer had been stopped 2 months previously. Her quality of life had rapidly deteriorated in the previous month and she had signed an advance directive stating that she did not wish to be resuscitated in the event of cardiopulmonary arrest.

On examination, she was cachectic and deeply jaundiced. Her pulse was 110 beats per minute and her BP was 90/60 mmHg. Her respiratory rate was 24 breaths per minute and her oxygen saturation was 90% (94–98), breathing air. She had widespread peripheral oedema.

Investigations:

haemoglobin	90 g/L (115–165)
white cell count	2.0×10^9/L (4.0–11.0)
neutrophil count	0.9×10^9/L (1.5–7.0)
platelet count	60×10^9/L (150–400)
serum albumin	24 g/L (37–49)
serum total bilirubin	157 µmol/L (1–22)

chest X-ray	lung metastases and small left pleural effusion

What is the most appropriate initial treatment for palliation of her breathlessness?

A: blood transfusion ○

B: co-amoxiclav ○

C: intravenous furosemide ○

D: morphine ○

E: pleural aspiration ○

Question 101 ⌄

Next Question

Question 101

No Answer Given

Incorrect

A 45-year-old woman was admitted with a 2-week history of worsening breathlessness. Chemotherapy for metastatic breast cancer had been stopped 2 months previously. Her quality of life had rapidly deteriorated in the previous month and she had signed an advance directive stating that she did not wish to be resuscitated in the event of cardiopulmonary arrest.

On examination, she was cachectic and deeply jaundiced. Her pulse was 110 beats per minute and her BP was 90/60 mmHg. Her respiratory rate was 24 breaths per minute and her oxygen saturation was 90% (94–98), breathing air. She had widespread peripheral oedema.

Investigations:

haemoglobin	90 g/L (115–165)
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serum albumin	24 g/L (37–49)
serum total bilirubin	157 μmol/L (1–22)
chest X-ray	lung metastases and small left pleural effusion

What is the most appropriate initial treatment for palliation of her breathlessness?

Answers

A: blood transfusion
B: co-amoxiclav
C: intravenous furosemide
D: morphine
E: pleural aspiration

Correct answer: D

Explanation

(72%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

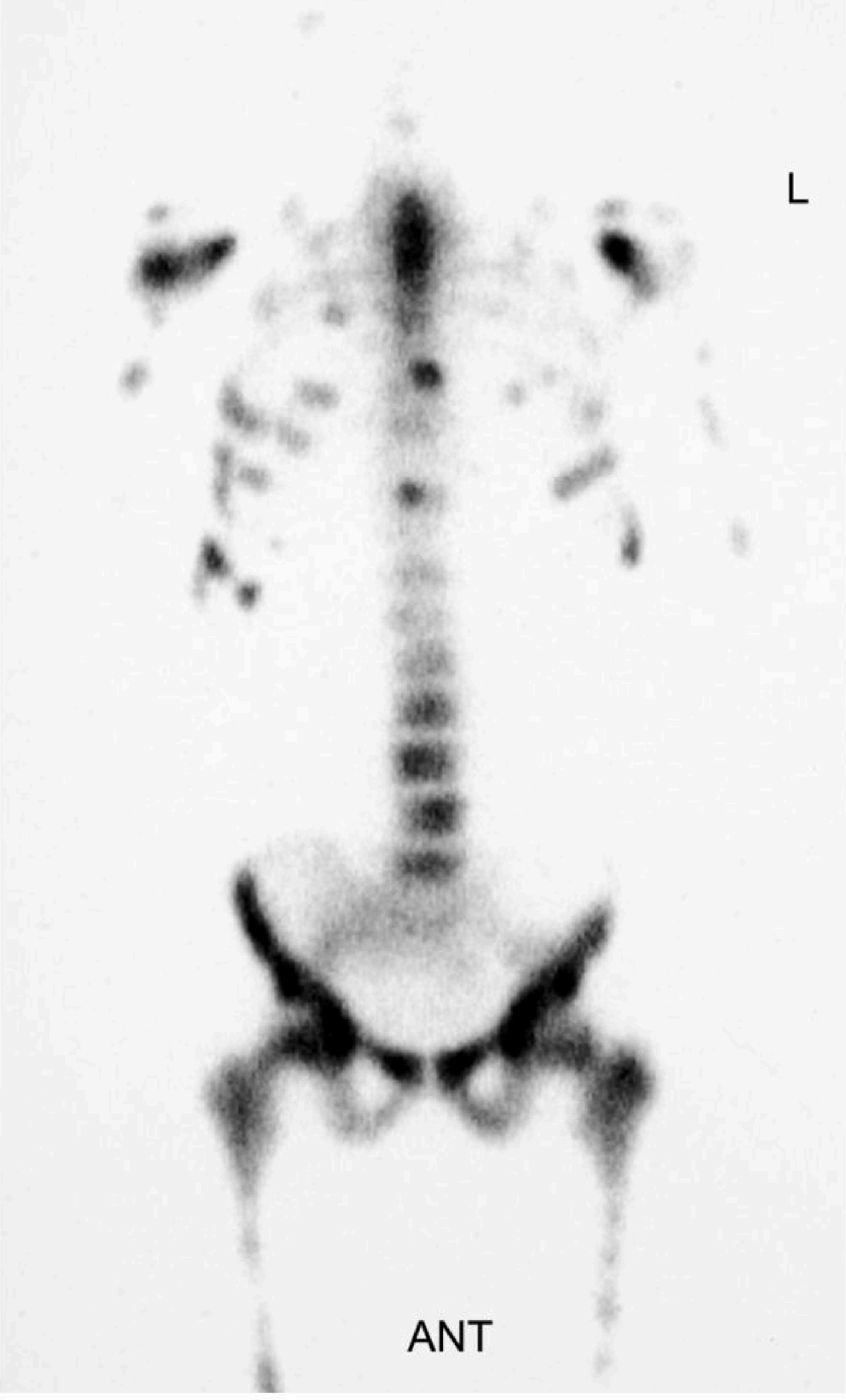
Although there may be some reversible pathology underlying this acute presentation, it is very clear that this patient is in the terminal stages of her breast cancer. Therefore, it is essential that relief of the patient’s symptoms should not be compromised by inappropriately aggressive management. Although the other answers may still form part of future management in this case, morphine is the option which is most likely to bring about rapid relief of her distress, even if this does potentially compromise her respiratory status.

Question 102

A 68-year-old man underwent investigation for haematuria, nocturia and bone pain. He was found to have prostate cancer.

Investigations:

haemoglobin	98 g/L (130–180)
serum prostate-specific antigen	168 µg/L (<4)
bone scan	see image



He started treatment with oral bicalutamide followed by goserelin injection 7 days later.

What is the most important role of bicalutamide in this situation?

- A: potentiates the action of goserelin ○
- B: provides immediate anti-cancer effect ○
- C: reduces detrusor irritability ○
- D: reduces goserelin-induced tumour flare ○
- E: reduces the likelihood of hypercalcaemia ○

Question 102

Next Question

Question 102

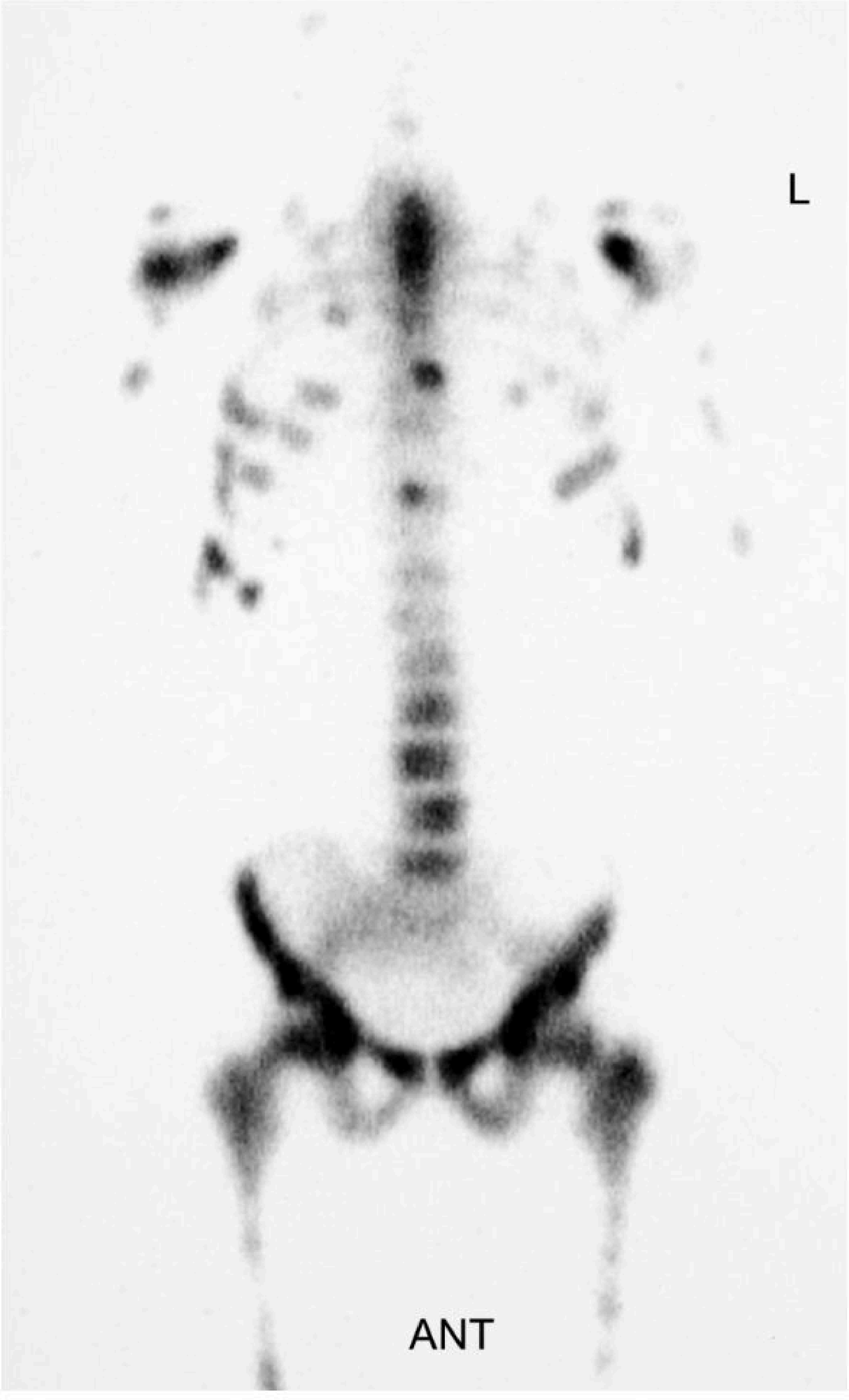
No Answer Given

Incorrect

A 68-year-old man underwent investigation for haematuria, nocturia and bone pain. He was found to have prostate cancer.

Investigations:

haemoglobin	98 g/L (130–180)
serum prostate-specific antigen	168 μg/L (<4)
bone scan	see image



He started treatment with oral bicalutamide followed by goserelin injection 7 days later.

What is the most important role of bicalutamide in this situation?

Answers

A: potentiates the action of goserelin
B: provides immediate anti-cancer effect
C: reduces detrusor irritability
D: reduces goserelin-induced tumour flare
E: reduces the likelihood of hypercalcaemia

Correct answer: D

Explanation

(55%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Androgen deprivation therapy (suppressing testosterone to castration level) is the mainstay of the treatment for advanced/ metastatic prostate cancer. Normal physiology is that hypothalamus produces gonadotrophin releasing hormone (GnRH) that binds to the receptors on gonadotropin-producing cells in pituitary to release gonadotropins – luteinising hormone (LH) and follicle-stimulating hormone (FSH). In males, LH stimulates Leydig cells in testes to produce testosterone.

Goserelin is one of the commonly used synthetic GnRH analogs (agonists), also known as luteinising hormone releasing hormone (LHRH) analog. These synthetic analogs are about 100 times more potent than natural GnRH. When goserelin binds to the GnRH receptors in gonadotropin-producing cells in the pituitary, its agonist activity causes immediate release of LH and FSH resulting in increased production of testosterone and tumour flare with worsening of prostate cancer related symptoms such as bladder obstruction, bone pain and other symptoms.

Bicalutamide is an androgen receptor antagonist. Pre-loading with bicalutamide should block the tumour's androgen receptors so that this surge in testosterone does not result in tumour cell stimulation. It is usually given 3–7 days before starting goserelin and continued for about 3 more weeks. After a few weeks of treatment with goserelin, GnRH receptors in pituitary cells are downregulated and LH and FSH production are subsequently ceased.

Other androgen receptor antagonists (such as flutamide, nilutamide and cyproterone acetate) may be used in the same way. Alternatively, the LHRH antagonists such as degarelix or leuprolide may be used without the need for flare protection as their antagonist action will not cause the initial release of LH and surge in androgen level.

Question 103

A 75-year-old man with depression had a good response after 3 months of treatment with an SSRI. He had no adverse physical symptoms and he had resumed social activities. However, he had read press reports that such drugs could be harmful, especially that they may cause suicidal thoughts, and he thought that he should stop the treatment.

What is the most appropriate advice?

A: continue existing therapy ○

B: reduce dosage of current drug by 50% ○

C: refer to a psychiatrist ○

D: stop antidepressant ○

E: switch to a tricyclic antidepressant ○

Question 103 ⌄

Next Question

Question 103

No Answer Given

Incorrect

A 75-year-old man with depression had a good response after 3 months of treatment with an SSRI. He had no adverse physical symptoms and he had resumed social activities. However, he had read press reports that such drugs could be harmful, especially that they may cause suicidal thoughts, and he thought that he should stop the treatment.

What is the most appropriate advice?

Answers

A: continue existing therapy
B: reduce dosage of current drug by 50%
C: refer to a psychiatrist
D: stop antidepressant
E: switch to a tricyclic antidepressant

Correct answer: A

Explanation

(83%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Discussion with the patient should include that the increased risk of suicide has only been observed in young patients in the early stages of treatment and treatment has been shown to reduce the risk in older adults. His risk of recurrent depression is high and he should benefit from continuing treatment to complete at least 6 months and consider long-term continuation. Therefore, stopping the antidepressant or reducing the dosage are not correct.

Switching to a tricyclic antidepressant is not correct as the patient is elderly (risk of prostate problems and glaucoma), and referral to a psychiatrist is not correct as he has responded well to treatment and needs to be reassured.

Question 104

A 29-year-old man presented with frequent episodes of loss of consciousness occurring over 8 months. His wife described two types of attack. In the first, he lost awareness for up to 20 minutes. During this time, he would sit down, be unable to speak and have his eyes tightly closed. In the second, he would fall to the ground without warning and lie still for up to 5 minutes. During this time, he would be unresponsive although, if disturbed, he would develop jerking movements of his limbs.

Ten years previously, he had had a witnessed tonic-clonic convulsion following an alcoholic binge. He had not drunk alcohol since. An EEG and an MR scan of brain had both been normal. He had been married for 1 year, his wife was pregnant and they had recently bought a house. He admitted to worrying about their financial situation.

Examination was normal.

What is the most likely diagnosis of these episodes of loss of consciousness?

A: adjustment reaction ○

B: complex partial seizures ○

C: depressive episode ○

D: non-epileptiform seizure disorder ○

E: panic attacks ○

Question 104

No Answer Given

Incorrect

A 29-year-old man presented with frequent episodes of loss of consciousness occurring over 8 months. His wife described two types of attack. In the first, he lost awareness for up to 20 minutes. During this time, he would sit down, be unable to speak and have his eyes tightly closed. In the second, he would fall to the ground without warning and lie still for up to 5 minutes. During this time, he would be unresponsive although, if disturbed, he would develop jerking movements of his limbs.

Ten years previously, he had had a witnessed tonic-clonic convulsion following an alcoholic binge. He had not drunk alcohol since. An EEG and an MR scan of brain had both been normal. He had been married for 1 year, his wife was pregnant and they had recently bought a house. He admitted to worrying about their financial situation.

Examination was normal.

What is the most likely diagnosis of these episodes of loss of consciousness?

Answers

A: adjustment reaction
B: complex partial seizures
C: depressive episode
D: non-epileptiform seizure disorder
E: panic attacks

Correct answer: D

Explanation

(71%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This is the differential diagnosis of blackout; there are no features of the ictus that suggest anxiety, panic or depression. In adjustment reactions, the background stresses are usually more substantial

In both attacks, the ictus is too long for an epileptic attack and there are no features suggestive of a partial seizure. Non-epileptiform seizure disorder is the most likely diagnosis of these blackout episodes.

Question 105

A 44-year-old woman presented with a 12-hour history of severe headache. She had systemic sclerosis and took occasional ibuprofen for arthralgia.

On examination, her BP was 188/132 mmHg and she had pedal oedema. Her optic fundi showed bilateral haemorrhages. She had no neurological deficit.

Investigations:

serum sodium	142 mmol/L (137–144)
serum potassium	3.2 mmol/L (3.5–4.9)
serum bicarbonate	18 mmol/L (20–28)
serum urea	11.0 mmol/L (2.5–7.0)
serum creatinine	255 μmol/L (60–110)

What is the most appropriate therapeutic intervention?

- A: doxazosin ○
- B: furosemide ○
- C: nifedipine ○
- D: ramipril ○
- E: sodium nitroprusside ○

Question 105 ⌄

Next Question

Question 105

No Answer Given

Incorrect

A 44-year-old woman presented with a 12-hour history of severe headache. She had systemic sclerosis and took occasional ibuprofen for arthralgia.

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serum creatinine	255 μmol/L (60–110)

What is the most appropriate therapeutic intervention?

Answers

A: doxazosin
B: furosemide
C: nifedipine
D: ramipril
E: sodium nitroprusside

Correct answer: D

Explanation

(44%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman is having a systemic sclerosis renal crisis, which is characterised by very marked overactivation of the renin angiotensin aldosterone system. Therefore, an ACE inhibitor is the drug of choice, of which ramipril is the only option from the choices given.

Question 106

A 40-year-old man presented with a 3-day history of abdominal pain and bloody diarrhoea. He had previously been well.

On examination, he was breathless and pale. He had a petechial rash on his shins. His pulse was 104 beats per minute and his BP was 174/98 mmHg. He had crackles in both lung fields. Urinalysis showed blood 3+, protein 1+.

Investigations:

haemoglobin	69 g/L (130–180)
white cell count	15.4 × 10^9/L (4.0–11.0)
platelet count	18 × 10^9/L (150–400)
blood film	red cell fragments and thrombocytopenia
serum sodium	139 mmol/L (137–144)
serum potassium	5.9 mmol/L (3.5–4.9)
serum urea	34.7 mmol/L (2.5–7.0)
serum creatinine	625 μmol/L (60–110)

What is the most likely cause of the acute kidney injury?

A: disseminated intravascular coagulation ○

B: Gram-negative bacteraemia ○

C: haemolytic uraemic syndrome ○

D: IgA vasculitis ○

E: microscopic polyangiitis ○

Question 106

No Answer Given

Incorrect

A 40-year-old man presented with a 3-day history of abdominal pain and bloody diarrhoea. He had previously been well.

On examination, he was breathless and pale. He had a petechial rash on his shins. His pulse was 104 beats per minute and his BP was 174/98 mmHg. He had crackles in both lung fields. Urinalysis showed blood 3+, protein 1+.

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serum urea	34.7 mmol/L (2.5–7.0)
serum creatinine	625 μmol/L (60–110)

What is the most likely cause of the acute kidney injury?

Answers

A: disseminated intravascular coagulation
B: Gram-negative bacteraemia
C: haemolytic uraemic syndrome
D: IgA vasculitis
E: microscopic polyangiitis

Correct answer: C

Explanation

(89%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

He has evidence of acute kidney injury (AKI), haemolytic anaemia and thrombocytopenia. This combination points to haemolytic uraemic syndrome (HUS) as the correct answer.

HUS can occur in the clinical setting of a diarrhoeal illness secondary to Escherichia coli O157.

Disseminated intravascular coagulation would be unlikely to cause AKI on its own, particularly if BP is maintained.

Gram-negative bacteraemia would be unlikely to cause AKI when BP is maintained, and the degree of haemolysis would be against that.

IgA vasculitis and microscopic polyangiitis would not cause haemolytic anaemia and thrombocytopenia.

Question 107

A 44-year-old man with a history of alcoholism was admitted to hospital with hypothermia. A nasogastric tube was inserted and subsequently used to feed him.

Three days later, he complained of muscle pain, generalised weakness and paraesthesiae. He became increasingly confused over the following 12 hours.

Investigations:

haemoglobin	112 g/L (130–180)
MCV	118 fL (80–96)
serum urea	2.2 mmol/L (2.5–7.0)
serum creatinine	98 μmol/L (60–110)
serum gamma glutamyl transferase	260 U/L (<50)
serum creatine kinase	3360 U/L (24–195)

What is the most likely explanation for the rhabdomyolysis?

A: hyperkalaemia ○

B: hypermagnesaemia ○

C: hypocalcaemia ○

D: hyponatraemia ○

E: hypophosphataemia ○

Question 107

Next Question

Question 107

No Answer Given

Incorrect

A 44-year-old man with a history of alcoholism was admitted to hospital with hypothermia. A nasogastric tube was inserted and subsequently used to feed him.

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serum creatinine	98 μmol/L (60–110)
serum gamma glutamyl transferase	260 U/L (<50)
serum creatine kinase	3360 U/L (24–195)

What is the most likely explanation for the rhabdomyolysis?

Answers

A: hyperkalaemia
B: hypermagnesaemia
C: hypocalcaemia
D: hyponatraemia
E: hypophosphataemia

Correct answer: E

Explanation

(66%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

In significantly malnourished patients, nasogastric feeding can cause electrolyte and fluid shifts that lead to complications including rhabdomyolysis. The re-feeding syndrome is characterised by low phosphate, low potassium, low magnesium, vitamin deficiencies and volume overload.

Hypophosphataemia is the hallmark of the syndrome and the predominant cause of complications. Feeding triggers cellular uptake of phosphate. Lack of phosphorylated intermediates can cause tissue hypoxia.

Question 108

A 64-year-old man with no significant past medical history was admitted with severe pneumonia. His condition deteriorated over the first 6 hours of his admission and he was ventilated in the intensive care unit. He required inotropic support with adrenaline (epinephrine) and haemofiltration. On day 2 of his admission, blood cultures grew Streptococcus pneumoniae and he was treated with intravenous benzylpenicillin. Prophylactic omeprazole was given. On day 6, he remained oliguric and still needed haemofiltration but otherwise was significantly improved and breathing spontaneously. Urinalysis showed protein 1+.

Investigations (day 1):

haemoglobin	127 g/L (130–180)
white cell count	19.2 × 10^9/L (4.0–11.0)
serum sodium	121 mmol/L (137–144)
serum potassium	5.9 mmol/L (3.5–4.9)
serum urea	14.2 mmol/L (2.5–7.0)
serum creatinine	121 μmol/L (60–110)
serum CRP	156 mg/L (<10)

Investigations (day 6):

haemoglobin	105 g/L (130–180)
white cell count	8.1 × 10^9/L (4.0–11.0)
serum sodium	142 mmol/L (137–144)
serum potassium	4.9 mmol/L (3.5–4.9)
serum urea	14.0 mmol/L (2.5–7.0)
serum creatinine	198 μmol/L (60–110)
serum CRP	55 mg/L (<10)

What is the most likely cause of his kidney injury?

A: acute interstitial nephritis ○

B: acute tubular necrosis ○

C: cortical necrosis ○

D: immune complex-mediated glomerulonephritis ○

E: post-infectious glomerulonephritis ○

Question 108 ⌄

Next Question

Question 108

No Answer Given

Incorrect

A 64-year-old man with no significant past medical history was admitted with severe pneumonia. His condition deteriorated over the first 6 hours of his admission and he was ventilated in the intensive care unit. He required inotropic support with adrenaline (epinephrine) and haemofiltration. On day 2 of his admission, blood cultures grew Streptococcus pneumoniae and he was treated with intravenous benzylpenicillin. Prophylactic omeprazole was given. On day 6, he remained oliguric and still needed haemofiltration but otherwise was significantly improved and breathing spontaneously. Urinalysis showed protein 1+.

Investigations (day 1):

haemoglobin	127 g/L (130–180)
white cell count	19.2 × 10^9/L (4.0–11.0)
serum sodium	121 mmol/L (137–144)
serum potassium	5.9 mmol/L (3.5–4.9)
serum urea	14.2 mmol/L (2.5–7.0)
serum creatinine	121 µmol/L (60–110)
serum CRP	156 mg/L (<10)

Investigations (day 6):

haemoglobin	105 g/L (130–180)
white cell count	8.1 × 10^9/L (4.0–11.0)
serum sodium	142 mmol/L (137–144)
serum potassium	4.9 mmol/L (3.5–4.9)
serum urea	14.0 mmol/L (2.5–7.0)
serum creatinine	198 µmol/L (60–110)
serum CRP	55 mg/L (<10)

What is the most likely cause of his kidney injury?

Answers

A: acute interstitial nephritis
B: acute tubular necrosis
C: cortical necrosis
D: immune complex-mediated glomerulonephritis
E: post-infectious glomerulonephritis

Correct answer: B

Explanation

(63%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has had septic shock secondary to pneumonia requiring inotropic and ventilatory support. This represents a severe renal insult, which will commonly lead to acute tubular necrosis (ATN). Cortical necrosis is extremely rare, while ATN is common. His urinalysis is reassuring, with no non-visible haematuria, which means glomerulonephritis is extremely unlikely. Acute interstitial nephritis (secondary to omeprazole) is possible; however, his creatinine was already abnormal (121 µmol/L) on admission to the intensive care unit before the omeprazole was introduced and, if this were the case, would represent a second discrete disease process, whereas ATN is caused by the severe systemic illness itself and is more common. Therefore, ATN is the most likely cause of his kidney injury.

Question 109

A 45-year-old woman with long-standing chronic kidney disease complained of breathlessness on climbing a flight of stairs. She had taken aspirin for several years and had recently started treatment with furosemide 40 mg daily, with symptomatic improvement.

On examination, her BP was 142/84 mmHg and she had ankle oedema.

Investigations:

haemoglobin	76 g/L (115–165)
MCV	90 fL (80–96)
serum ferritin	326 μg/L (15–300)

serum sodium	138 mmol/L (137–144)
serum potassium	4.8 mmol/L (3.5–4.9)
serum bicarbonate	20 mmol/L (20–28)
serum urea	26.2 mmol/L (2.5–7.0)
serum creatinine	480 μmol/L (60–110)
eGFR (MDRD)	9 mL/min/1.73 m^2 (>60)

What is the most appropriate next management step?

A: blood transfusion ○

B: increase the dosage of furosemide ○

C: start epoetin ○

D: start intravenous iron ○

E: stop aspirin ○

Question 109

No Answer Given

Incorrect

A 45-year-old woman with long-standing chronic kidney disease complained of breathlessness on climbing a flight of stairs. She had taken aspirin for several years and had recently started treatment with furosemide 40 mg daily, with symptomatic improvement.

On examination, her BP was 142/84 mmHg and she had ankle oedema.

Investigations:

haemoglobin	76 g/L (115–165)
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serum ferritin	326 µg/L (15–300)

serum sodium	138 mmol/L (137–144)
serum potassium	4.8 mmol/L (3.5–4.9)
serum bicarbonate	20 mmol/L (20–28)
serum urea	26.2 mmol/L (2.5–7.0)
serum creatinine	480 µmol/L (60–110)
eGFR (MDRD)	9 mL/min/1.73 m^2 (>60)

What is the most appropriate next management step?

Answers

A: blood transfusion
B: increase the dosage of furosemide
C: start epoetin
D: start intravenous iron
E: stop aspirin

Correct answer: C

Explanation

(60%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman is breathless because of severe anaemia secondary to her advanced chronic kidney disease. She has adequate iron stores (ferritin >200 µg/L) and a normal MCV and there is no suggestion of bleeding (as a reason to stop the aspirin) nor an indication for intravenous iron. Her breathlessness has improved since starting treatment with furosemide so she is less likely to derive significant further benefit from a dose titration. Blood transfusion should be avoided as she does not have severe manifestations (such as angina or heart failure), and she may be a candidate for renal transplantation in the future (risk of sensitisation with blood products). Her haemoglobin is below 100 g/L and, therefore, an erythropoietin-stimulating agent is indicated.

Question 110
Next Question

Question 110

An 84-year-old woman was admitted after being found on the floor by her carers. She had a history of hypertension. Her medication included aspirin, furosemide and ramipril.

On examination, her BP was 104/52 mmHg. Her JVP was not visible and she had no oedema.

Investigations:

serum sodium	123 mmol/L (137–144)
serum potassium	4.6 mmol/L (3.5–4.9)
serum urea	9.3 mmol/L (2.5–7.0)
serum creatinine	116 µmol/L (60–110)
serum osmolality	276 mosmol/kg (278–300)

urinary osmolality	720 mosmol/kg (100–1000)
urinary sodium	<10 mmol/L

What is the most appropriate treatment?

A: fluid restriction ○

B: intravenous sodium bicarbonate 1.4% ○

C: intravenous sodium chloride 0.9% ○

D: oral demeclocycline ○

E: oral sodium chloride ○

Question 110

No Answer Given

Incorrect

An 84-year-old woman was admitted after being found on the floor by her carers. She had a history of hypertension. Her medication included aspirin, furosemide and ramipril.

On examination, her BP was 104/52 mmHg. Her JVP was not visible and she had no oedema.

Investigations:

serum sodium	123 mmol/L (137–144)
serum potassium	4.6 mmol/L (3.5–4.9)
serum urea	9.3 mmol/L (2.5–7.0)
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serum osmolality	276 mosmol/kg (278–300)
urinary osmolality	720 mosmol/kg (100–1000)
urinary sodium	<10 mmol/L

What is the most appropriate treatment?

Answers

A: fluid restriction
B: intravenous sodium bicarbonate 1.4%
C: intravenous sodium chloride 0.9%
D: oral demeclocycline
E: oral sodium chloride

Correct answer: C

Explanation

(68%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The clinical history, signs and investigations all suggest volume depletion. Important pointers include the low BP, non-visible JVP, elevated urea and creatinine, concentrated urine (high osmolality), and low urinary sodium (appropriate response to volume depletion).

Low serum sodium can occur in patients with volume depletion when there is salt and water loss, which stimulates antidiuretic hormone release and ingestion of water alone.

As the patient is volume depleted, fluid restriction and oral demeclocycline are incorrect.

Oral sodium chloride would be inappropriate and there is no indication for intravenous sodium bicarbonate.

Question 111

A 58-year-old woman complained of recent ankle swelling. Her only medication was diclofenac, which she had been taking for 3 months for non-specific joint pains. She had no other medical history.

On examination, her BP was 144/92 mmHg and she had pitting oedema of both ankles. There were no other abnormal findings. Urinalysis showed blood 1+, protein 3+.

Investigations:

serum sodium	141 mmol/L (137–144)
sodium potassium	5.6 mmol/L (3.5–4.9)
serum urea	8.6 mmol/L (2.5–7.0)
serum creatinine	126 µmol/L (60–110)
serum albumin	27 g/L (37–49)
random plasma glucose	11.4 mmol/L
urinary protein:creatinine ratio	720 mg/mmol (<30)

A renal biopsy was performed.

What is the most likely histological appearance?

A: amyloidosis ○

B: diabetic nephropathy ○

C: focal segmental glomerulosclerosis ○

D: interstitial nephritis ○

E: membranous nephropathy ○

Question 111

No Answer Given

Incorrect

A 58-year-old woman complained of recent ankle swelling. Her only medication was diclofenac, which she had been taking for 3 months for non-specific joint pains. She had no other medical history.

On examination, her BP was 144/92 mmHg and she had pitting oedema of both ankles. There were no other abnormal findings. Urinalysis showed blood 1+, protein 3+.

Investigations:

serum sodium	141 mmol/L (137–144)
sodium potassium	5.6 mmol/L (3.5–4.9)
serum urea	8.6 mmol/L (2.5–7.0)
serum creatinine	126 μmol/L (60–110)
serum albumin	27 g/L (37–49)
random plasma glucose	11.4 mmol/L
urinary protein:creatinine ratio	720 mg/mmol (<30)

A renal biopsy was performed.

What is the most likely histological appearance?

Answers

A: amyloidosis
B: diabetic nephropathy
C: focal segmental glomerulosclerosis
D: interstitial nephritis
E: membranous nephropathy

Correct answer: E

Explanation

(40%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This woman has nephrotic syndrome (oedema, heavy proteinuria and hypoalbuminaemia). Interstitial nephritis does not cause nephrotic syndrome so is incorrect. She does not have any pre-existing inflammatory condition that would lead to amyloidosis. She has raised random plasma glucose, but in the absence of any symptoms, this does not meet the diagnostic criteria for diabetesbut will require further investigation. Membranous nephropathy is a more common cause of nephrotic syndrome in a northern European population than focal segmental glomerulosclerosis, and can be associated with diclofenac use.

Question 112

A 23-year-old woman was referred to the renal clinic with a history of dark-brown discoloration of her urine, which had started the evening after taking amoxicillin for a sore throat. She had also experienced some loin pain. She had no significant past medical history and was taking no other medication.

On examination, her BP was 156/92 mmHg. She had mild renal angle tenderness. Urinalysis showed blood 3+, protein 2+.

Investigations:

serum urea	8.0 mmol/L (2.5–7.0)
serum creatinine	172 µmol/L (60–110)
eGFR (MDRD)	34 mL/min/1.73 m^2 (>60)

urinary protein:creatinine ratio	218 mg/mmol (<30)

What is the most appropriate imaging investigation?

A: CT scan of renal tract ○

B: intravenous urography ○

C: isotope renography ○

D: MR angiography of renal tract ○

E: ultrasound scan of renal tract ○

Question 112

No Answer Given

Incorrect

A 23-year-old woman was referred to the renal clinic with a history of dark-brown discoloration of her urine, which had started the evening after taking amoxicillin for a sore throat. She had also experienced some loin pain. She had no significant past medical history and was taking no other medication.

On examination, her BP was 156/92 mmHg. She had mild renal angle tenderness. Urinalysis showed blood 3+, protein 2+.

Investigations:

serum urea	8.0 mmol/L (2.5–7.0)
serum creatinine	172 µmol/L (60–110)
eGFR (MDRD)	34 mL/min/1.73 m^2 (>60)

urinary protein:creatinine ratio	218 mg/mmol (<30)

What is the most appropriate imaging investigation?

Answers

A: CT scan of renal tract
B: intravenous urography
C: isotope renography
D: MR angiography of renal tract
E: ultrasound scan of renal tract

Correct answer: E

Explanation

(55%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The most likely diagnosis in this clinical setting is IgA nephropathy. The positive urinalysis,

elevated creatinine and protein creatinine ratio and high BP suggest an underlying glomerulonephritis, so she should have a diagnostic renal biopsy. The safest and simplest imaging test would be an ultrasound scan (answer E) to make sure her kidneys are a reasonable size before proceeding with renal biopsy. CT scan is not needed and exposes the patient to unnecessary radiation. It is used predominantly to identify stones or renal masses. Intravenous urography would not be used, particularly with underlying renal impairment as there is a risk of contrast nephropathy. It is now rarely used, as ultrasound and CT scans have improved. Isotope renography can provide functional and anatomical information, such as showing renal scarring or a delay in isotope excretion because of obstruction, but both of these are unlikely with this presentation. MR angiography has a role in identifying patients with suspected renal artery stenosis.

Question 113
Next Question

Question 113

A 34-year-old woman was referred to the outpatient clinic with a 3-week history of feeling unwell and a 2-day history of joint pains. She had presented to her general practitioner 2 weeks previously, and had been treated with amoxicillin for a presumed urinary tract infection. Urinalysis at that time had been positive for blood and protein.

On examination, she looked unwell. Her BP was 168/89 mmHg. She had synovitis of the metacarpophalangeal joints of her left hand, and an erythematous rash on her lower limbs. Urinalysis showed blood 2+, protein 3+.

Investigations:

haemoglobin	90 g/L (115–165)
white cell count	4.1 × 10^9/L (4.0–11.0)
platelet count	123 × 10^9/L (150–400)

serum urea	13.7 mmol/L (2.5–7.0)
serum creatinine	246 μmol/L (60–110)

What is the most likely cause of her renal impairment?

A: acute tubulointerstitial nephritis ○

B: IgA nephropathy ○

C: lupus nephritis ○

D: microscopic polyangiitis ○

E: post-infectious glomerulonephritis ○

Question 113

No Answer Given

Incorrect

A 34-year-old woman was referred to the outpatient clinic with a 3-week history of feeling unwell and a 2-day history of joint pains. She had presented to her general practitioner 2 weeks previously, and had been treated with amoxicillin for a presumed urinary tract infection. Urinalysis at that time had been positive for blood and protein.

On examination, she looked unwell. Her BP was 168/89 mmHg. She had synovitis of the metacarpophalangeal joints of her left hand, and an erythematous rash on her lower limbs. Urinalysis showed blood 2+, protein 3+.

Investigations:

haemoglobin	90 g/L (115–165)
white cell count	4.1 × 10^9/L (4.0–11.0)
platelet count	123 × 10^9/L (150–400)

serum urea	13.7 mmol/L (2.5–7.0)
serum creatinine	246 µmol/L (60–110)

What is the most likely cause of her renal impairment?

Answers

A: acute tubulointerstitial nephritis
B: IgA nephropathy
C: lupus nephritis
D: microscopic polyangiitis
E: post-infectious glomerulonephritis

Correct answer: C

Explanation

(51%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This young woman has rapidly progressive glomerulonephritis in the context of a systemic illness. Therefore, tubulointerstitial nephritis is incorrect. The features described are not those of IgA vasculitis (the systemic manifestation of IgA nephropathy). Microscopic polyangiitis and post-infectious glomerulonephritis are possible, but would normally be associated with a vasculitic or a purpuric rash. In a young woman, the presence of arthralgia, anaemia, thrombocytopenia, rash and borderline leukopenia makes lupus nephritis the most likely diagnosis.

Question 114

An 80-year-old man presented with a 6-month history of malaise, shortness of breath and ankle swelling.

On examination, he was breathless at rest and he had periorbital purpura. He had oedema to his mid-calf.

Investigations:

serum urea	21.3 mmol/L (2.5–7.0)
serum creatinine	340 µmol/L (60–110)
serum corrected calcium	2.01 mmol/L (2.20–2.60)
serum albumin	20 g/L (37–49)
urinary protein:creatinine ratio	420 mg/mmol (<30)
urine electrophoresis	free lambda light chains
serum IgG	8.3 g/L (6.0–13.0)
serum IgA	0.7 g/L (0.8–3.0)
serum IgM	1.9 g/L (0.4–2.5)
serum protein electrophoresis	normal
ultrasound scan of abdomen	normal-sized kidneys

What is the most likely diagnosis?

A: AL amyloidosis ○

B: focal segmental glomerulosclerosis ○

C: membranous nephropathy ○

D: myeloma kidney ○

E: Waldenström macroglobulinaemia ○

Question 114

No Answer Given

Incorrect

An 80-year-old man presented with a 6-month history of malaise, shortness of breath and ankle swelling.

On examination, he was breathless at rest and he had periorbital purpura. He had oedema to his mid-calf.

Investigations:

serum urea	21.3 mmol/L (2.5–7.0)
serum creatinine	340 µmol/L (60–110)
serum corrected calcium	2.01 mmol/L (2.20–2.60)
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urinary protein:creatinine ratio	420 mg/mmol (<30)
urine electrophoresis	free lambda light chains
serum IgG	8.3 g/L (6.0–13.0)
serum IgA	0.7 g/L (0.8–3.0)
serum IgM	1.9 g/L (0.4–2.5)
serum protein electrophoresis	normal
ultrasound scan of abdomen	normal-sized kidneys

What is the most likely diagnosis?

Answers

A: AL amyloidosis
B: focal segmental glomerulosclerosis
C: membranous nephropathy
D: myeloma kidney
E: Waldenström macroglobulinaemia

Correct answer: A

Explanation

(58%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man presents with nephrotic syndrome, renal impairment and purpura. He has free lambda light chains in his urine and this in conjunction with his presentation, makes AL amyloidosis the most likely diagnosis. Some patients with AL amyloid will have an underlying diagnosis of multiple myeloma but the fact that this patient does not have hypercalcaemia nor a serum paraprotein means that AL amyloidosis is a more likely diagnosis than multiple myeloma.

Focal segmental glomerulosclerosis and membranous nephropathy often present with nephrotic syndrome but are unlikely to cause purpura nor are they associated with free lambda light chains.

The patient does not have an IgM monogamopathy, which makes Waldenström macroglobulinaemia unlikely.

Question 115

A 41-year-old man was admitted to hospital with severe pain in his right loin, radiating to his testicle. Six years previously, he had undergone lithotripsy for a renal calculus.

On examination, he was apyrexial and his BP was 120/85 mmHg. Urinalysis showed blood 2+, protein 1+.

He was treated with analgesia and intravenous fluids, and his symptoms improved.

Investigations:

serum creatinine	106 µmol/L (60–110)
serum corrected calcium	2.46 mmol/L (2.20–2.60)
serum phosphate	1.00 mmol/L (0.80–1.45)
serum urate	0.48 mmol/L (0.23–0.46)
24-h urinary calcium	14.7 mmol (2.5–7.5)
CT urogram	two 2-cm calculi in right renal parenchyma; one 1-cm calculus in left kidney; no hydronephrosis

He was started on a low-sodium diet.

What is the most appropriate long-term treatment?

A: allopurinol ○

B: bendroflumethiazide ○

C: furosemide ○

D: low-calcium diet ○

E: penicillamine ○

Question 115

Next Question

Question 115

No Answer Given

Incorrect

A 41-year-old man was admitted to hospital with severe pain in his right loin, radiating to his testicle. Six years previously, he had undergone lithotripsy for a renal calculus.

On examination, he was apyrexial and his BP was 120/85 mmHg. Urinalysis showed blood 2+, protein 1+.

He was treated with analgesia and intravenous fluids, and his symptoms improved.

Investigations:

serum creatinine	106 µmol/L (60–110)
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CT urogram	two 2-cm calculi in right renal parenchyma; one 1-cm calculus in left kidney; no hydronephrosis

He was started on a low-sodium diet.

What is the most appropriate long-term treatment?

Answers

A: allopurinol
B: bendroflumethiazide
C: furosemide
D: low-calcium diet
E: penicillamine

Correct answer: B

Explanation

(53%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This man has developed renal calculi in the context of hypercalcuria. Bendroflumethiazide reduces urinary calcium excretion while the others medications do not (some are indicated for other types of renal calculi e.g. allopurinol for urate stones and penicillamine is for the treatment of cystinuria). Furosemide increases urinary calcium excretion. A long-term low-calcium diet would have a detrimental effect on his bone health.

Question 116

A 62-year-old woman presented with intermittent claudication of her right leg. She had a 40 pack-year history of cigarette smoking. She had taken ibuprofen intermittently for 9 years for non-specific joint pains.

On examination, her BP was 164/96 mmHg. Examination was otherwise normal. Urinalysis showed blood 1+.

Investigations:

serum creatinine	190 μmol/L (60–110)
ultrasound scan of kidneys	right kidney 8.6 cm, left kidney 10.2 cm; smooth outlines; no obstruction

What is the most appropriate initial antihypertensive agent?

A: amlodipine ○

B: atenolol ○

C: bendroflumethiazide ○

D: irbesartan ○

E: ramipril ○

Question 116

No Answer Given

Incorrect

A 62-year-old woman presented with intermittent claudication of her right leg. She had a 40 pack-year history of cigarette smoking. She had taken ibuprofen intermittently for 9 years for non-specific joint pains.

On examination, her BP was 164/96 mmHg. Examination was otherwise normal. Urinalysis showed blood 1+.

Investigations:

serum creatinine	190 µmol/L (60–110)
ultrasound scan of kidneys	right kidney 8.6 cm, left kidney 10.2 cm; smooth outlines; no obstruction

What is the most appropriate initial antihypertensive agent?

Answers

A: amlodipine
B: atenolol
C: bendroflumethiazide
D: irbesartan
E: ramipril

Correct answer: A

Explanation

(68%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The history of intermittent claudication and smoking and the ultrasound evidence of renal asymmetry means the patient is likely to have renal artery stenosis, so irbesartan and ramipril should be avoided.

A beta-adrenoceptor blocker is no longer considered a first-line trratment for hypertension and may make claudication symptoms worse.

Bendroflumethiazide can be used but is less effective in patients with chronic kidney disease.

According to the 2011 NICE guidelines on the treatment of hypertension, a calcium channel blocker is recommended as the first-line treatment in a patient of this age who is unable to take an ACE or angiotensin-receptor blocking agent.

Question 117

A 29-year-old woman presented to her general practitioner with a 6-month history of gradually worsening tiredness. She had no other symptoms. During childhood, she had been investigated for recurrent urinary tract infections. However, she had been lost to hospital follow-up from the age of 11, and the results of the investigations were not available.

Investigations performed by her general practitioner:

haemoglobin	72 g/L (115–165)

serum urea	31.2 mmol/L (2.5–7.0)
serum creatinine	676 µmol/L (60–110)

She was referred to hospital as an emergency.

On examination, she was comfortable at rest. Her pulse was 92 beats per minute, her BP was 146/88 mmHg and her respiratory rate was 24 breaths per minute. There was no oedema and her chest was clear. Arterial blood gas analysis was performed with the patient breathing air.

Which set of results is most likely?

	PO_2 (kPa)	PCO_2 (kPa)	pH	H+ (nmol/L)	bicarbonate (mmol/L)
normal	11.3–12.6	4.7–6.0	7.35–7.45	35–45	21–29
A	12.1	3.7	7.39	41	17
B	18.3	3.3	7.20	63	10
C	12.3	5.3	7.03	93	10
D	8.8	6.7	7.04	92	13
E	12.6	2.9	7.51	31	18

A: A ○

B: B ○

C: C ○

D: D ○

E: E ○

Question 117

Next Question

Question 117

No Answer Given

Incorrect

A 29-year-old woman presented to her general practitioner with a 6-month history of gradually worsening tiredness. She had no other symptoms. During childhood, she had been investigated for recurrent urinary tract infections. However, she had been lost to hospital follow-up from the age of 11, and the results of the investigations were not available.

Investigations performed by her general practitioner:

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Which set of results is most likely?

	PO_2 (kPa)	PCO_2 (kPa)	pH	H+ (nmol/L)	bicarbonate (mmol/L)
normal	11.3–12.6	4.7–6.0	7.35–7.45	35–45	21–29
A	12.1	3.7	7.39	41	17
B	18.3	3.3	7.20	63	10
C	12.3	5.3	7.03	93	10
D	8.8	6.7	7.04	92	13
E	12.6	2.9	7.51	31	18

Answers

A: A
B: B
C: C
D: D
E: E

Correct answer: A

Explanation

(45%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This young woman has presented with advanced chronic kidney disease (as suggested by urinary tract infections as a child, 6-month history of fatigue, anaemia and absence of an acute illness). Therefore, she will have developed a metabolic acidosis secondary to her chronic kidney disease slowly over time, allowing time for compensatory mechanisms. She has a respiratory rate of 24 breaths per minute, which would suggest respiratory compensation (so CO_2 would not be high-normal as in option C or D). Option E represents an alkalosis. Option B shows a severe metabolic acidosis with marked respiratory compensation (note very high PO_2 on air and low CO_2 – a patient with this degree of acidosis would have marked Kussmaul breathing). Therefore, option A, with a moderate compensated metabolic acidosis is the most likely set of results.

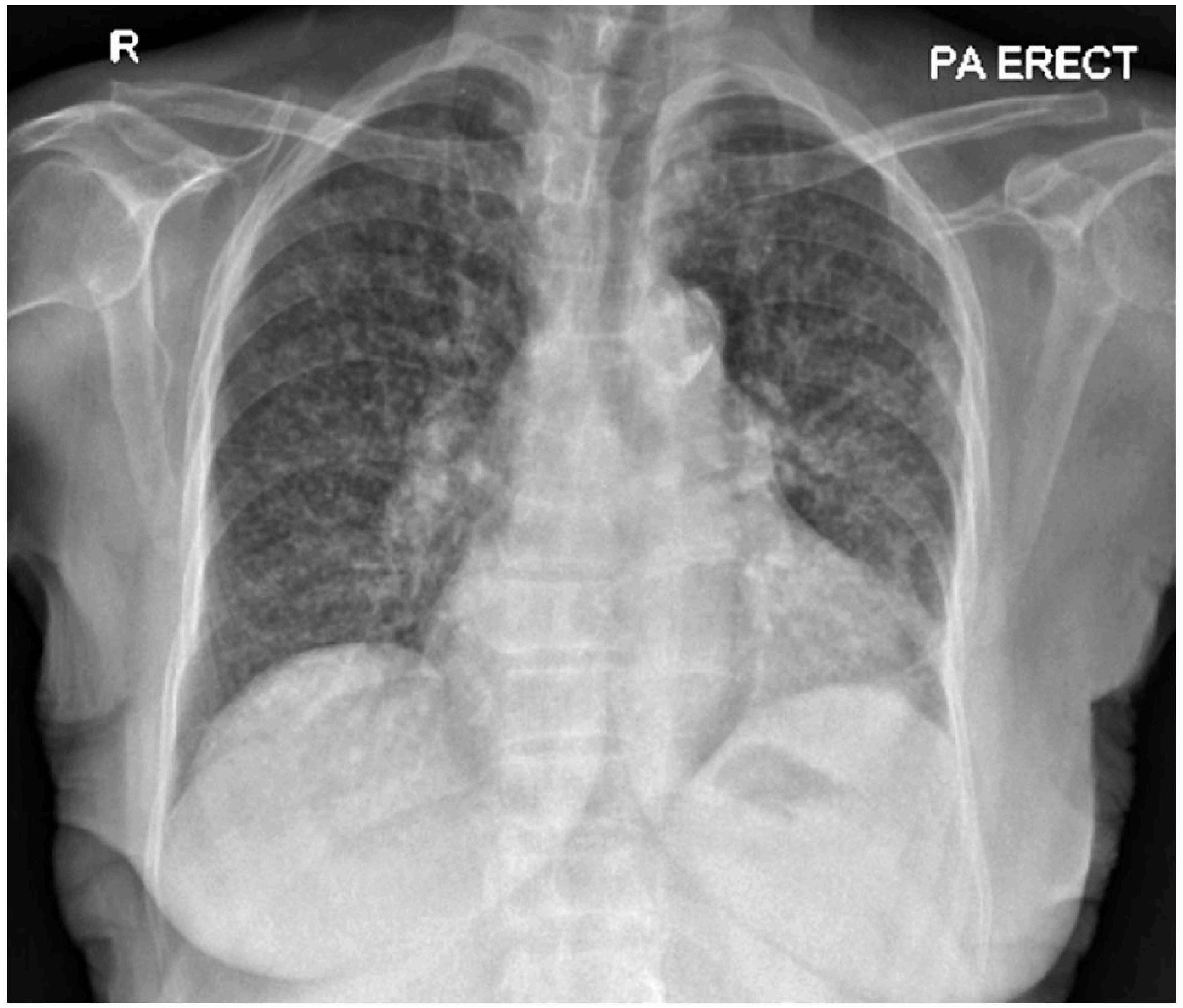
Question 118

A 70-year-old woman presented with joint pains and shortness of breath. She had entered the UK as an asylum seeker 2 years previously, when she had been found to have chronic kidney disease. She had been started on haemodialysis.

On examination, there was evidence of weight loss. Her chest was clear on auscultation.

Investigations:

chest X-ray	see image



What is the most likely diagnosis?

A: fluid overload ○

B: granulomatosis with polyangiitis ○

C: metastatic cancer ○

D: miliary tuberculosis ○

E: sarcoidosis ○

Question 118

Next Question

Question 118

No Answer Given

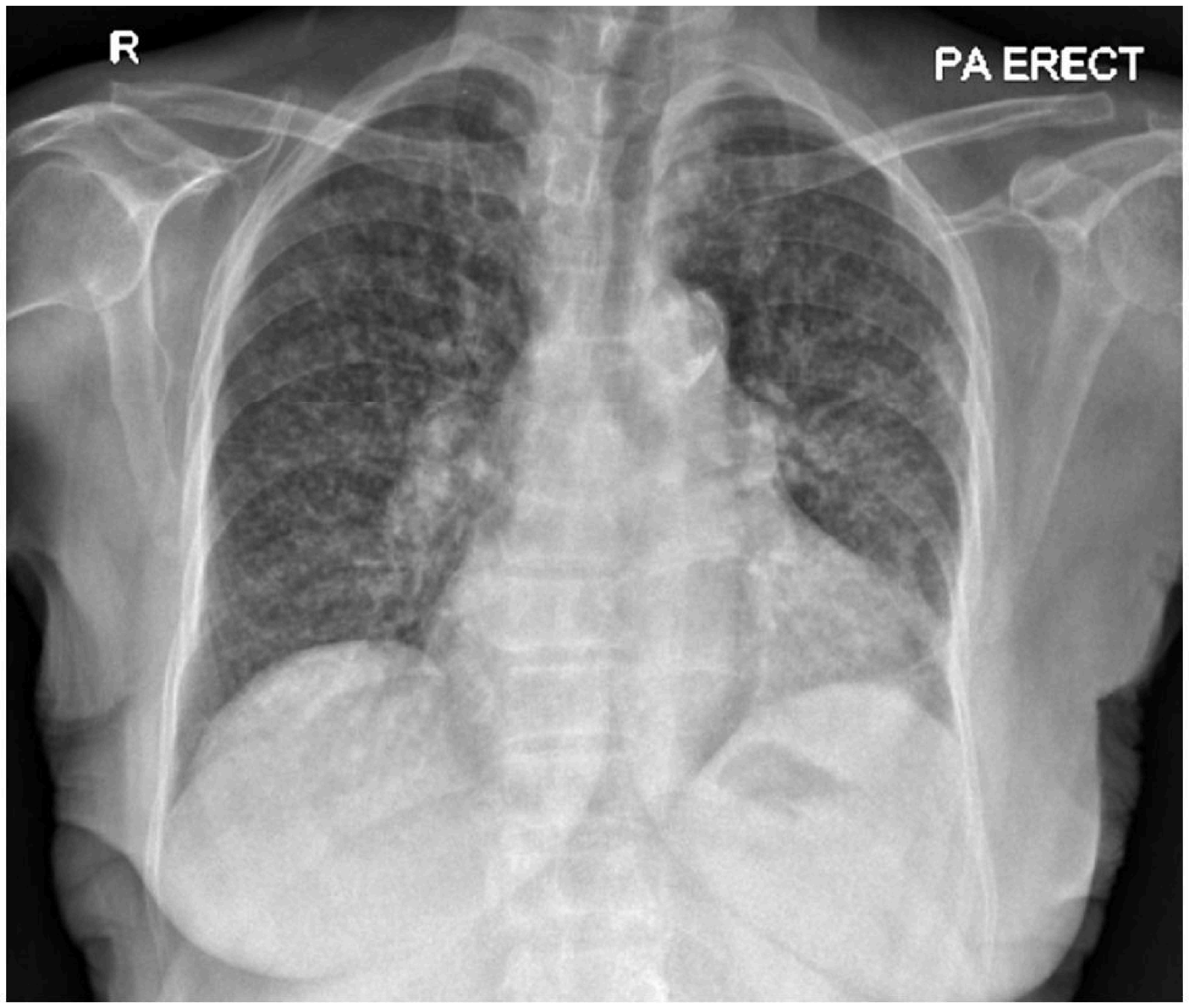
Incorrect

A 70-year-old woman presented with joint pains and shortness of breath. She had entered the UK as an asylum seeker 2 years previously, when she had been found to have chronic kidney disease. She had been started on haemodialysis.

On examination, there was evidence of weight loss. Her chest was clear on auscultation.

Investigations:

chest X-ray	see image



What is the most likely diagnosis?

Answers

A: fluid overload
B: granulomatosis with polyangiitis
C: metastatic cancer
D: miliary tuberculosis
E: sarcoidosis

Correct answer: D

Explanation

(62%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Bilateral miliary nodules are characteristic of tuberculosis, of which asylum seekers are at increased risk, particularly in the context of a chronic illness (renal failure). In sarcoidosis and metastatic cancer, the nodules are bigger, and there is often associated lymphadenopathy. Characteristically, granulomatosis with polyangiitis results in large cavitating nodules. There are no chest X-ray features indicative of fluid overload, such as upper lobe blood diversion and pleural effusion.

Question 119

A 23-year-old woman had a 2-year history of a recurrent productive cough occasionally associated with wheeze. She was a non-smoker and had no history of childhood respiratory problems. Her only other symptoms were intermittent abdominal pain with occasional diarrhoea. She had been treated with an inhaled corticosteroid, which had helped the wheeze but her cough had persisted.

Examination was normal.

Investigations:

haemoglobin	116 g/L (115–165)
white cell count	7.8 × 10^9/L (4.0–11.0)
eosinophil count	0.62 × 10^9/L (0.04–0.40)

sputum culture	growth of Staphylococcus aureus

FEV_1	1.72 L (predicted 2.24)
FVC	2.72 L (predicted 2.80)
FEV_1 after bronchodilator	1.82 L
FVC after bronchodilator	2.80 L

chest X-ray	normal

What is the most appropriate next diagnostic test?

A: cilia motility test ○

B: cystic fibrosis gene analysis ○

C: duodenal biopsy ○

D: histamine challenge test ○

E: oral corticosteroid trial ○

Question 119

Next Question

Question 119

No Answer Given

Incorrect

A 23-year-old woman had a 2-year history of a recurrent productive cough occasionally associated with wheeze. She was a non-smoker and had no history of childhood respiratory problems. Her only other symptoms were intermittent abdominal pain with occasional diarrhoea. She had been treated with an inhaled corticosteroid, which had helped the wheeze but her cough had persisted.

Examination was normal.

Investigations:

haemoglobin	116 g/L (115–165)
white cell count	7.8 × 10^9/L (4.0–11.0)
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sputum culture	growth of Staphylococcus aureus

FEV_1	1.72 L (predicted 2.24)
FVC	2.72 L (predicted 2.80)
FEV_1 after bronchodilator	1.82 L
FVC after bronchodilator	2.80 L

chest X-ray	normal

What is the most appropriate next diagnostic test?

Answers

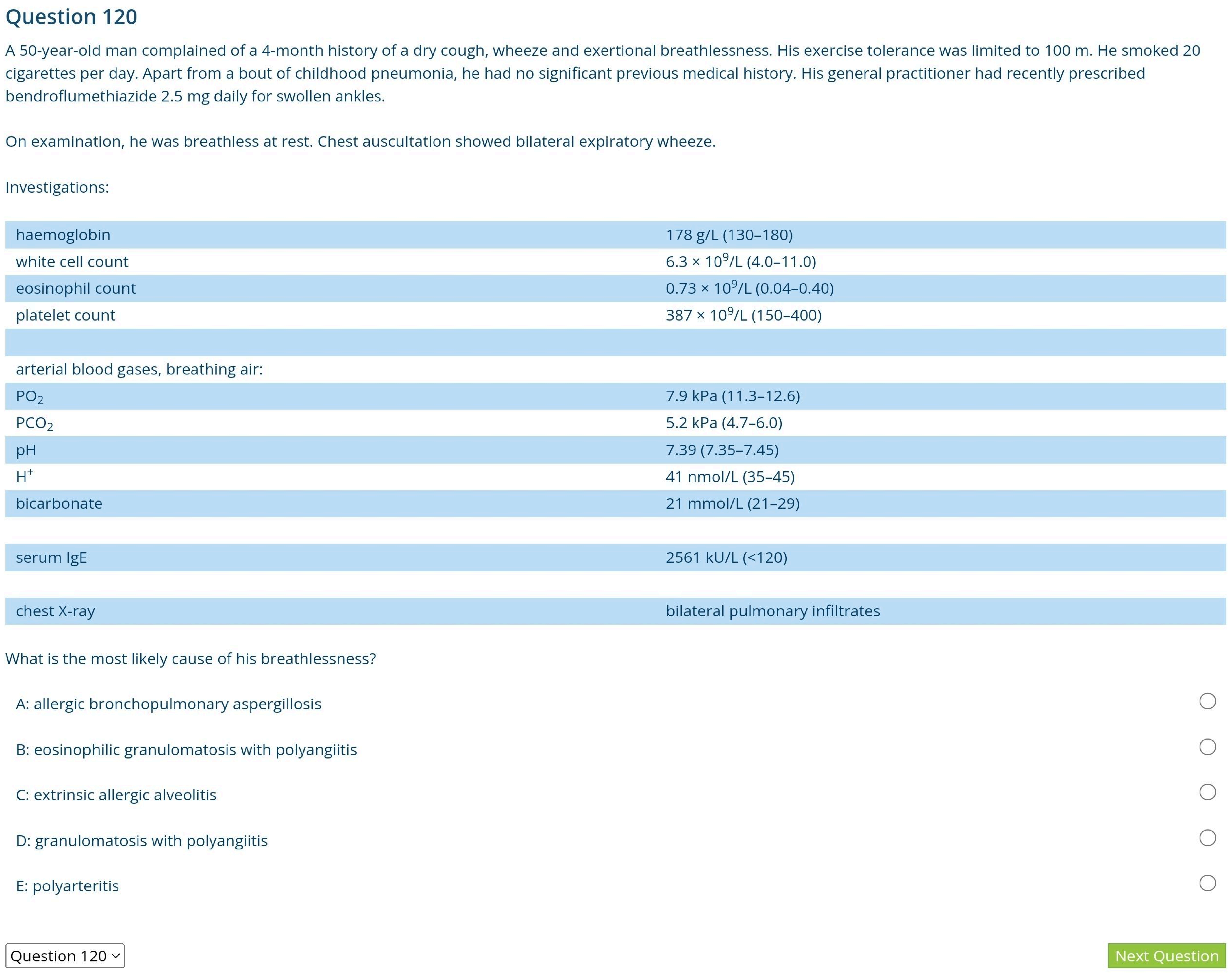
A: cilia motility test
B: cystic fibrosis gene analysis
C: duodenal biopsy
D: histamine challenge test
E: oral corticosteroid trial

Correct answer: B

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Cystic fibrosis is the only answer that could account for both the respiratory and abdominal symptoms, in this young woman. The other diagnostic tests are only investigating one or other of those systems.



Question 120

A 50-year-old man complained of a 4-month history of a dry cough, wheeze and exertional breathlessness. His exercise tolerance was limited to 100 m. He smoked 20 cigarettes per day. Apart from a bout of childhood pneumonia, he had no significant previous medical history. His general practitioner had recently prescribed bendroflumethiazide 2.5 mg daily for swollen ankles.

On examination, he was breathless at rest. Chest auscultation showed bilateral expiratory wheeze.

Investigations:

haemoglobin	178 g/L (130–180)
white cell count	6.3×10^9/L (4.0–11.0)
eosinophil count	0.73×10^9/L (0.04–0.40)
platelet count	387×10^9/L (150–400)
arterial blood gases, breathing air:	
PO_2	7.9 kPa (11.3–12.6)
PCO_2	5.2 kPa (4.7–6.0)
pH	7.39 (7.35–7.45)
H^+	41 nmol/L (35–45)
bicarbonate	21 mmol/L (21–29)

serum IgE	2561 kU/L (<120)

chest X-ray	bilateral pulmonary infiltrates

What is the most likely cause of his breathlessness?

A: allergic bronchopulmonary aspergillosis ○

B: eosinophilic granulomatosis with polyangiitis ○

C: extrinsic allergic alveolitis ○

D: granulomatosis with polyangiitis ○

E: polyarteritis ○

Question 120

Next Question

Question 120

No Answer Given

Incorrect

A 50-year-old man complained of a 4-month history of a dry cough, wheeze and exertional breathlessness. His exercise tolerance was limited to 100 m. He smoked 20 cigarettes per day. Apart from a bout of childhood pneumonia, he had no significant previous medical history. His general practitioner had recently prescribed bendroflumethiazide 2.5 mg daily for swollen ankles.

On examination, he was breathless at rest. Chest auscultation showed bilateral expiratory wheeze.

Investigations:

haemoglobin	178 g/L (130–180)
white cell count	6.3 × 10^9/L (4.0–11.0)
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arterial blood gases, breathing air:	
PO_2	7.9 kPa (11.3–12.6)
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pH	7.39 (7.35–7.45)
H^+	41 nmol/L (35–45)
bicarbonate	21 mmol/L (21–29)
serum IgE	2561 kU/L (<120)
chest X-ray	bilateral pulmonary infiltrates

What is the most likely cause of his breathlessness?

Answers

A: allergic bronchopulmonary aspergillosis
B: eosinophilic granulomatosis with polyangiitis
C: extrinsic allergic alveolitis
D: granulomatosis with polyangiitis
E: polyarteritis

Correct answer: A

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Only allergic bronchopulmonary aspergillosis and eosinophilic granulomatosis with polyangiitis could explain the asthmatic features (wheeze) in the context of an eosinophilia, raised IgE and pulmonary infiltrates on the chest X-ray. The absence of a long history of atopy or any neurological symptoms, and the finding of a very high serum IgE make allergic bronchopulmonary aspergillosis the more likely answer.

Question 121

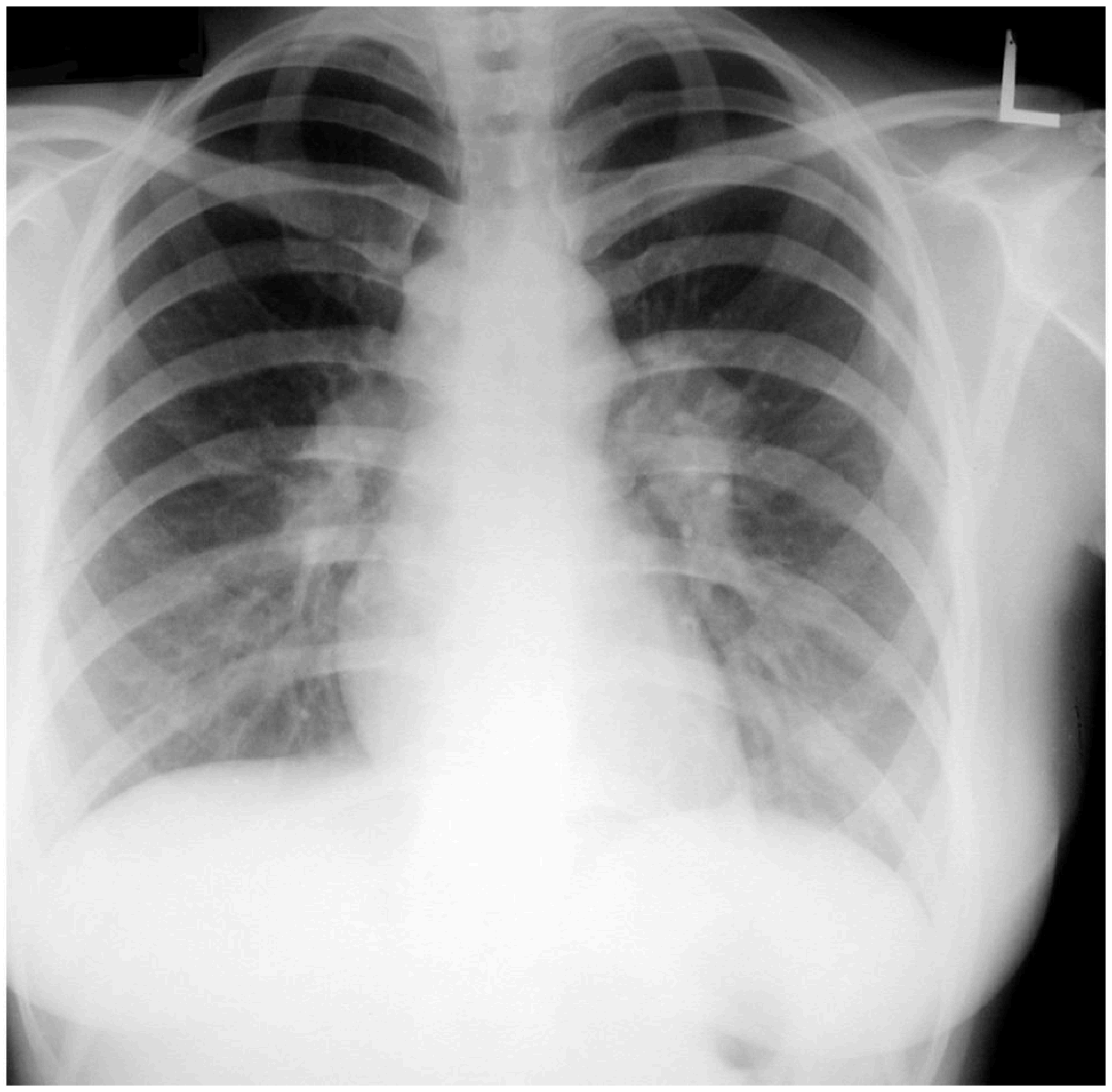
A 35-year-old Jamaican woman presented to the outpatient clinic with a 6-week history of cough and increasing breathlessness. She had asthma for which she took inhaled beclometasone and salbutamol. She worked in a pet shop and had returned from a holiday in Jamaica 3 months previously. She smoked 5 cigarettes per day.

Examination of her chest was normal.

Investigations:

haemoglobin	123 g/L (115–165)
white cell count	10.0 × 10^9/L (4.0–11.0)
neutrophil count	8.6 × 10^9/L (1.5–7.0)
lymphocyte count	0.9 × 10^9/L (1.5–4.0)
monocyte count	0.4 × 10^9/L (<0.8)
eosinophil count	0.12 × 10^9/L (0.04–0.40)
haemoglobin electrophoresis	sickle cell trait

FEV_1	2.7 L (3.05)
FVC	3.2 L (3.51)
chest X-ray	see image



What is the most appropriate next investigation?

A: auramine stain of sputum ○

B: avian precipitins ○

C: histoplasma antibody titre ○

D: serum IgE ○

E: transbronchial needle aspiration ○

Question 121

Next Question

Question 121

No Answer Given

Incorrect

A 35-year-old Jamaican woman presented to the outpatient clinic with a 6-week history of cough and increasing breathlessness. She had asthma for which she took inhaled beclometasone and salbutamol. She worked in a pet shop and had returned from a holiday in Jamaica 3 months previously. She smoked 5 cigarettes per day.

Examination of her chest was normal.

Investigations:

haemoglobin	123 g/L (115–165)
white cell count	10.0 × 10^9/L (4.0–11.0)
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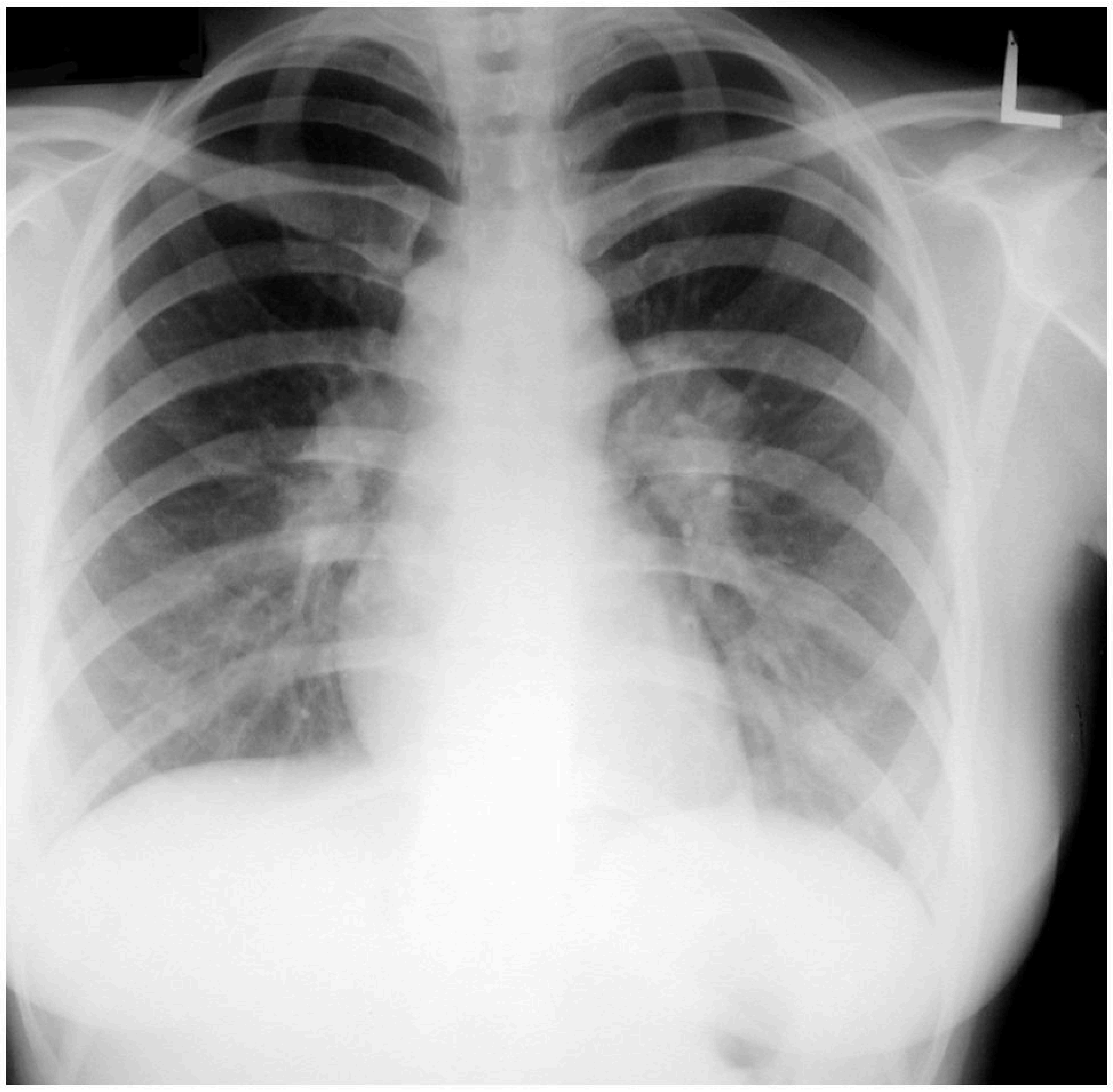
lymphocyte count	0.9 × 10^9/L (1.5–4.0)
monocyte count	0.4 × 10^9/L (<0.8)
eosinophil count	0.12 × 10^9/L (0.04–0.40)
haemoglobin electrophoresis	sickle cell trait
FEV_1	2.7 L (3.05)
FVC	3.2 L (3.51)
chest X-ray	see image



What is the most appropriate next investigation?

Answers

A: auramine stain of sputum
B: avian precipitins
C: histoplasma antibody titre
D: serum IgE
E: transbronchial needle aspiration

Correct answer: E

Explanation

(58%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

The chest X-ray shows bilateral hilar lymphadenopathy, which is characteristic of sarcoidosis, a condition more common in African–Caribbean patients. Transbronchial needle aspiration is positive in approximately two-thirds of cases. In contrast, tuberculosis and histoplasmosis almost invariably result in unilateral hilar lymphadenopathy, often with changes in the lung fields. Bilateral hilar lymphadenopathy is not a feature of extrinsic allergic alveolitis, a condition in which crackles are usually heard. Allergic bronchopulmonary aspergillosis does not result in bilateral hilar lymphadenopathy, though is associated with a raised blood eosinophilia count, and pulmonary infiltrates on the chest X-ray.

Question 122

A 65-year-old man with moderately severe COPD was admitted with a 24-hour history of increasing breathlessness and right-sided pleuritic chest pain. His exercise tolerance was usually 100 m on level ground. His sputum had been clear recently.

On examination, he was breathless at rest. His oxygen saturation was 90% (94–98), breathing air. His chest was hyperinflated, with reduced air entry on the right side and wheezes audible on the left.

Investigations:

chest X-ray	20% right-sided pneumothorax

What is the most appropriate next step in management?

A: chest aspiration ○

B: decompression with a cannula ○

C: insertion of a chest drain ○

D: observation, with repeat chest X-ray in 24 h ○

E: treatment with high-flow oxygen ○

Question 122 ⌄

Next Question

Question 122

No Answer Given

Incorrect

A 65-year-old man with moderately severe COPD was admitted with a 24-hour history of increasing breathlessness and right-sided pleuritic chest pain. His exercise tolerance was usually 100 m on level ground. His sputum had been clear recently.

On examination, he was breathless at rest. His oxygen saturation was 90% (94–98), breathing air. His chest was hyperinflated, with reduced air entry on the right side and wheezes audible on the left.

Investigations:

chest X-ray	20% right-sided pneumothorax

What is the most appropriate next step in management?

Answers

A: chest aspiration
B: decompression with a cannula
C: insertion of a chest drain
D: observation, with repeat chest X-ray in 24 h
E: treatment with high-flow oxygen

Correct answer: C

Explanation

(85%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Guidelines for the management of pneumothorax were produced by the British Thoracic Society in 2010 (www.brit-thoracic.org.uk). In a COPD patient, recurrence after chest aspiration alone is common. Even with a small pneumothorax, a patient who is breathless, warrants some form of intervention. Accordingly, insertion of a chest drain is the correct answer.

Question 123

A 49-year-old man was seen in the chest clinic with a long history of COPD. He had not had an exacerbation for 2 years. He was taking an inhaled long-acting anticholinergic and a short-acting beta$_2$-adrenoceptor agonist.

On examination, his BMI was 23.0 kg/m^2 (18.0–25.0). He was markedly dyspnoeic on minimal exertion. His oxygen saturation was 95% (94–98) breathing air.

Investigations:

FEV$_1$	2.6 L (predicted 3.5)
FVC	4.3 L (predicted 4.7)

What is the most appropriate management of his exercise intolerance?

A: assessment for long-term oxygen therapy ○

B: dietitian advice ○

C: inhaled corticosteroid ○

D: mucolytic ○

E: pulmonary rehabilitation ○

Question 123 ⌄

Next Question

Question 123

No Answer Given

Incorrect

A 49-year-old man was seen in the chest clinic with a long history of COPD. He had not had an exacerbation for 2 years. He was taking an inhaled long-acting anticholinergic and a short-acting beta$_2$-adrenoceptor agonist.

On examination, his BMI was 23.0 kg/m^2 (18.0–25.0). He was markedly dyspnoeic on minimal exertion. His oxygen saturation was 95% (94–98) breathing air.

Investigations:

FEV$_1$	2.6 L (predicted 3.5)
FVC	4.3 L (predicted 4.7)

What is the most appropriate management of his exercise intolerance?

Answers

A: assessment for long-term oxygen therapy
B: dietitian advice
C: inhaled corticosteroid
D: mucolytic
E: pulmonary rehabilitation

Correct answer: E

Explanation

There is a discordance between the quite reasonable lung spirometry results, and this man's breathlessness on minimal exertion. In such a context, pulmonary rehabilitation is a proven benefit. It is unlikely this man warrants long-term oxygen therapy based on these measures of lung function, and a normal oxygen saturation on breathing air. Similarly, dietary advice is unlikely to help in a man with a normal BMI. Inhaled corticosteroids may improve measures of lung function, though is unlikely to improve exercise intolerance in this scenario. Mucolytic therapy only has an effect on cough and sputum production, and not breathlessness.

Question 124

A 51-year-old man presented with a 2-month history of generalised aches and pains, and difficulty in climbing stairs. He also reported breathlessness on minimal exertion.

On examination, he had difficulty getting out of the chair and he had proximal muscle weakness in his arms and legs. His fingers were swollen and his grip was limited. Auscultation of his chest showed fine inspiratory crackles.

Investigations:

ESR	55 mm/1st h (<20)
serum total bilirubin	8 μmol/L (1–22)
serum aspartate aminotransferase	230 U/L (1–31)
serum alkaline phosphatase	95 U/L (45–105)
serum creatine kinase	12 600 U/L (24–195)
antinuclear antibodies	1:320 dilution (negative at 1:20)
chest X-ray	normal

What antibody is most likely to be positive in this patient?

A: anticentromere ○

B: anti-double-stranded DNA ○

C: anti-Jo-1 ○

D: anti-myeloperoxidase ○

E: anti-topoisomerase ○

Question 124

Next Question

Question 124

No Answer Given

Incorrect

A 51-year-old man presented with a 2-month history of generalised aches and pains, and difficulty in climbing stairs. He also reported breathlessness on minimal exertion.

On examination, he had difficulty getting out of the chair and he had proximal muscle weakness in his arms and legs. His fingers were swollen and his grip was limited. Auscultation of his chest showed fine inspiratory crackles.

Investigations:

ESR	55 mm/1st h (<20)
serum total bilirubin	8 µmol/L (1–22)
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serum alkaline phosphatase	95 U/L (45–105)
serum creatine kinase	12 600 U/L (24–195)
antinuclear antibodies	1:320 dilution (negative at 1:20)
chest X-ray	normal

What antibody is most likely to be positive in this patient?

Answers

A: anticentromere
B: anti-double-stranded DNA
C: anti-Jo-1
D: anti-myeloperoxidase
E: anti-topoisomerase

Correct answer: C

Explanation

(82%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

A middle-aged man presents with clinical and laboratory evidence of myositis, arthritis and interstitial lung disease. Anticentromere antibody is specific for limited cutaneous systemic sclerosis and this man has no evidence of systemic sclerosis. Anti-double-stranded DNA antibody is specific for systemic lupus erythematosus. Anti-topoisomerase antibodies (Scl-70) are found in some patients with systemic sclerosis. Anti-myeloperoxidase is found in patients with ANCA-associated vasculitis. Anti-Jo-1 antibody is a myositis-specific antibody. This serotype often translates to the phenotype described in the question.

Question 125
Next Question

Question 125

A 28-year-old woman presented to the hypertension clinic with sustained hypertension confirmed by ambulatory BP monitoring. She had one child and wished to conceive again in the near future.

On examination, her BP was 146/106 mmHg, similar to her ambulatory daytime average.

Investigations did not reveal a secondary cause.

What is the most appropriate treatment?

A: atenolol ○

B: candesartan ○

C: doxazosin ○

D: labetalol ○

E: ramipril ○

Question 125

No Answer Given

Incorrect

A 28-year-old woman presented to the hypertension clinic with sustained hypertension confirmed by ambulatory BP monitoring. She had one child and wished to conceive again in the near future.

On examination, her BP was 146/106 mmHg, similar to her ambulatory daytime average.

Investigations did not reveal a secondary cause.

What is the most appropriate treatment?

Answers

A: atenolol
B: candesartan
C: doxazosin
D: labetalol
E: ramipril

Correct answer: D

Explanation

(67%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

This question asks about the drug treatment of essential hypertension in women planning pregnancy. The approach is similar to the treatment of hypertension in pregnant women.

Secondary causes of hypertension have been excluded. Her diastolic BP is elevated enough to warrant drug treatment.

There is NICE guidance relating to this question: http://www.nice.org.uk/guidance/cg107. Labetalol is first-line therapy; alternatives include methyldopa and nifedipine.

ACE inhibitors and angiotensin receptor blockers can cause congenital abnormalities. Atenolol has been linked to intrauterine growth restriction. Although the data for doxazosin are less clear (animal studies suggest potential fetal abnormalities), this drug is fourth-line therapy in the management of young hypertensive individuals.

Question 126

A 54-year-old woman was admitted from a psychiatric unit with increasing agitation, vomiting and diarrhoea. She had a history of depression, treated with citalopram. Tramadol had recently been added to her prescription for severe lower back pain.

On examination, she was restless and agitated. Her temperature was 38.3°C, her pulse was 120 beats per minute and her BP was 140/85 mmHg. She was flushed and shivering.

Investigations:

haemoglobin	135 g/L (115–165)
white cell count	10.5 × 10^9/L (4.0–11.0)
platelet count	326 × 10^9/L (150–400)

serum sodium	138 mmol/L (137–144)
serum potassium	4.2 mmol/L (3.5–4.9)
serum bicarbonate	18 mmol/L (20–28)
serum urea	9.5 mmol/L (2.5–7.0)
serum creatinine	115 μmol/L (60–110)
random plasma glucose	5.1 mmol/L

What is the most likely diagnosis?

A: eosinophilia–myalgia syndrome ○

B: malignant hyperpyrexia ○

C: neuroleptic malignant syndrome ○

D: septicaemia ○

E: serotonin syndrome ○

Question 126 ⌄

Next Question

Question 126

No Answer Given

Incorrect

A 54-year-old woman was admitted from a psychiatric unit with increasing agitation, vomiting and diarrhoea. She had a history of depression, treated with citalopram. Tramadol had recently been added to her prescription for severe lower back pain.

On examination, she was restless and agitated. Her temperature was 38.3°C, her pulse was 120 beats per minute and her BP was 140/85 mmHg. She was flushed and shivering.

Investigations:

haemoglobin	135 g/L (115–165)
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serum creatinine	115 μmol/L (60–110)
random plasma glucose	5.1 mmol/L

What is the most likely diagnosis?

Answers

A: eosinophilia–myalgia syndrome
B: malignant hyperpyrexia
C: neuroleptic malignant syndrome
D: septicaemia
E: serotonin syndrome

Correct answer: E

Explanation

The clinical picture is highly suggestive of serotonin syndrome and the clue is the interaction between tramadol and citalopram, both drugs exhibit serotonin reuptake inhibition.

The clinical presentation of the serotonin syndrome and neuroleptic malignant syndrome are very similar, but the drug history is key.

Although the clinical presentation might suggest sepsis this is not supported by the investigations or elevated BP.

Malignant hyperpyrexia is classically associated with general anaesthesia. Eosinophilia–myalgia syndrome is a very rare chronic condition.

Question 127

A 78-year-old woman was due to be discharged from hospital after an elective cholecystectomy. She had a history of ischaemic heart disease and atrial fibrillation, and was taking bisoprolol, lisinopril and warfarin. Her usual dosage of warfarin had been 3 mg daily. Warfarin had been stopped and low-molecular-weight heparin given perioperatively.

On examination, her pulse was 68 beats per minute and irregularly irregular.

Investigations:

haemoglobin	114 g/L (115–165)
platelet count	348 × 10^9/L (150–400)
INR	1.2 (<1.4)

serum total bilirubin	25 μmol/L (1–22)
serum alanine aminotransferase	33 U/L (5–35)
serum alkaline phosphatase	108 U/L (45–105)

What is the most appropriate management?

A: continue low-molecular-weight heparin for 6 weeks ○

B: delay re-introduction of warfarin for 1 week ○

C: restart warfarin at usual dosage ○

D: restart warfarin with loading dose ○

E: start aspirin instead of warfarin ○

Question 127

Next Question

Question 127

No Answer Given

Incorrect

A 78-year-old woman was due to be discharged from hospital after an elective cholecystectomy. She had a history of ischaemic heart disease and atrial fibrillation, and was taking bisoprolol, lisinopril and warfarin. Her usual dosage of warfarin had been 3 mg daily. Warfarin had been stopped and low-molecular-weight heparin given perioperatively.

On examination, her pulse was 68 beats per minute and irregularly irregular.

Investigations:

haemoglobin	114 g/L (115–165)
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What is the most appropriate management?

Answers

A: continue low-molecular-weight heparin for 6 weeks
B: delay re-introduction of warfarin for 1 week
C: restart warfarin at usual dosage
D: restart warfarin with loading dose
E: start aspirin instead of warfarin

Correct answer: C

Explanation

(50%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Follows British Society of Haematology guidance.

This individual is at significant risk of stroke: age, female gender and ischaemic heart disease. The CHA_2DS_2-VASc score suggests high risk. The surgery does not significantly impact on her bleeding risk.

Therefore, the restarting of warfarin early is indicated. The key question is with or without a loading dose. Evidence points towards starting at the usual dosage; however, a bridging dose of low-molecular-weight heparin may also be considered, but this is not one of the options.

Question 128

A 32-year-old woman sought advice about anticoagulation during pregnancy, shortly after missing a menstrual period. She had experienced recurrent deep venous thromboses and had been taking warfarin regularly without ill effect for 3 years. A pregnancy test proved positive.

What is the most appropriate recommendation?

- A: continue warfarin throughout pregnancy ○
- B: substitute fondaparinux until term ○
- C: substitute low-molecular-weight heparin during first trimester only ○
- D: substitute low-molecular-weight heparin until term ○
- E: substitute unfractionated heparin until term ○

Question 128

Next Question

Question 128

No Answer Given

Incorrect

A 32-year-old woman sought advice about anticoagulation during pregnancy, shortly after missing a menstrual period. She had experienced recurrent deep venous thromboses and had been taking warfarin regularly without ill effect for 3 years. A pregnancy test proved positive.

What is the most appropriate recommendation?

Answers

A: continue warfarin throughout pregnancy
B: substitute fondaparinux until term
C: substitute low-molecular-weight heparin during first trimester only
D: substitute low-molecular-weight heparin until term
E: substitute unfractionated heparin until term

Correct answer: D

Explanation

(78%) The percentage in brackets shows the percentage of just-passing candidates who answered the question correctly when it was last used in the Part 2 Written Examination.

Warfarin is teratogenic and crosses the placenta with risk of congenital malformations, and placental, fetal, or neonatal haemorrhage, especially during the last few weeks of pregnancy and at delivery. Therefore, warfarin should be avoided in pregnancy, especially in the first and third trimesters (BNF).

Fondaparinux is not advised to be used in pregnancy.

Low-molecular-weight heparin is preferred to unfractioned heparin as it less likely to cause osteoporosis and heparin-induced thrombocytopenia.